THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—21ST YEAR. SYDNEY, SATURDAY, MAY 26, 1934. No. 21.

Table of Contents

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

ORIGINAL ARTICLES— PAGE.

"Hypoglycæmia and Ketosis: Their Relationship to Chronic Antral Disease and Bronchiectasis", by CLIVE SIPPE, M.B., Ch.M., M.R.C.P. 675

"A Note on the Venom of the Sydney Funnel-Web Spider, Atrax Robustus", by C. H. KELLAWAY, M.C., M.D., M.S., F.R.C.P. 678

"Louping Ill Virus as a Possible Cause of the X Disease Epidemics of 1917-1918", by F. M. BURNET, M.D., Ph.D. 679

"A Serological Test for Cancer", by WARNFORD MOFFETT, M.D., Ch.M. 681

"Rudimentary Patellæ, Other Skeletal Defects, and Dystrophy of the Nails", by M. P. SUSMAN, M.B., Ch.M., F.R.C.S. 685

"The Technique of Taking a Biopsy in Relation to the Modification of Life Span of a Tumour-Bearing Animal", by ELINOR S. HUNT, M.B., Ch.M. 686

"A Report on Thirty Cases of 'Evipan Sodium' Anæsthesia", by J. S. MACMAHON, M.B., Ch.M., F.R.C.S., F.R.A.C.S., and E. G. MACMAHON, M.B., Ch.M., F.R.C.S. 690

REVIEWS—

Progress in Medicine 692

Food and Its Cooking for Children 692

LEADING ARTICLES—

Mind and Medicine 693

CURRENT COMMENT—

The Strain of Pregnancy 694

Cooking and Chemistry 695

ABSTRACTS FROM CURRENT MEDICAL LITERATURE— PAGE.

Dermatology 696

Urology 697

BRITISH MEDICAL ASSOCIATION NEWS—

Scientific 698

Nominations and Elections 698

MEDICAL SOCIETIES—

The Victorian Medical Benevolent Association .. 698

The Melbourne Pædiatric Society 700

Medical Women's Society of New South Wales 702

OBITUARY—

Robert Kingsbury Lee Brown 703

CORRESPONDENCE—

Lodge Certificates 704

Tuberculin 704

Chronic Nephritis and Lead Poisoning 705

Convulsions in Early Infancy 705

Nicotiana Suaveolens 705

POST-GRADUATE WORK—

Course of Instruction in Anatomy and Physiology 705

BOOKS RECEIVED 705

DIARY FOR THE MONTH 706

MEDICAL APPOINTMENTS 706

MEDICAL APPOINTMENTS VACANT, ETC. 706

MEDICAL APPOINTMENTS: IMPORTANT NOTICE 706

EDITORIAL NOTICES 706

HYPOGLYCÆMIA AND KETOSIS: THEIR RELATIONSHIP TO CHRONIC ANTRAL DISEASE AND BRONCHIECTASIS.

By CLIVE SIPPE, M.B., Ch.M. (Sydney), M.R.C.P. (London),
Honorary Relieving Out-Patient Physician, Brisbane General Hospital, Queensland.

THE symptoms associated with a lowered blood sugar content are extremely diverse, since they may arise from alteration in function of any organ in the body.[1][2] Wohlwill[3] has reported the finding of widespread Nissl's degeneration of the ganglionic cells of the brain and an amœboid appearance of the glial cells in two cases after death from hypoglycæmia. Electrocardiographic studies have shown that the heart muscle is frequently affected, as demonstrated by such signs as flattening of the *P* and *T* waves,[4] and the author[5] has observed the return of the electrocardiogram to normal after administration of glucose. Further observations indicate that changes occur in the respiratory tract, and the theory is advanced that hypoglycæmia has an important bearing on the ætiology of many cases of chronic sinus infection and non-tuberculous pulmonary fibrosis.

Attention has often been drawn to the occurrence of frequent colds and watery nasal discharge in association with allergy. There seems no doubt that the allergic individual possesses a sensitive nasal mucous membrane and that this sensitivity frequently extends to the lining of the lower respiratory passages. Cohen and Rudolph[6] in America have drawn attention to the X ray changes in the antra in association with what they describe as an allergic state, and they have shown, both clinically and radiologically, the improvement which takes place with appropriate general treatment.

The cases described in this article demonstrate, both clinically and radiologically, a similar nasal

condition in association with a general metabolic disturbance expressed as a persistent hypoglycæmia or as a ketosis. Electrocardiographic studies have shown that in hypoglycæmia and ketosis there is insufficient glucose for normal contractions of the cardiac muscle. Ketonuria is evidence of deficient glucose available for complete combustion of fats. The important point is the question of availability of glucose, as in ketosis the blood sugar may be in the normal range. In diabetes similar changes take place in the heart muscle, as demonstrated by the electrocardiograph,[7] because, although the blood sugar is raised, the tissues cannot utilize the glucose. Thus the presence of acetonuria or a blood sugar below 0·075% may be regarded as evidence of the fact that there is a deficiency in the glucose available to the tissues. These individuals possess what Lapage[8] has termed an exudative diathesis, and the condition is very closely linked to the allergic state. Frequently this appears to be due to a lack of fixation of fluid in the tissues in association with insufficient available glucose.

Case Histories.

CASE I.—A patient, a male, aged nine years, had suffered previously from measles and bronchopneumonia. From six to eight years of age he had an almost constant irritative cough with a mucoid nasal discharge. As the usual remedies gave no relief, he was sent to a dry elevated district for six months, during which time his cough disappeared, but the symptoms recurred on his returning to Brisbane.

An X ray examination of sinuses (Figure I) revealed dulness of both antra. Acetonuria was present on several occasions.

There was immediate improvement on treatment with glucose and a low fat diet, with no return of symptoms during the past two years. On a few occasions there had been mild sniffling when treatment had been neglected and acetone had reappeared in the urine. Figure II represents the sinuses completely cleared four months after commencement of treatment.

These investigations represent the chronic nasal condition and were not performed during an acute exacerbation.

CASE II.—A patient, a male, aged seven years, had previously suffered from gastro-enteritis and acidosis. Since early infancy he had been subject to acute attacks of bronchitis which, as he grew older, were becoming so frequent that the least change in the weather or exposure in the night air would induce an attack. Treatments of various types were constantly tried without affording relief.

An X ray examination of the lungs showed increased hilar and peribronchial markings. Clinical and X ray (Figure III) investigation of the sinuses revealed antral disease, for which intranasal antrostomy was recommended. As there was a history of acidosis and the urine contained acetone, glucose and a low fat diet were recommended. Figure IV shows that the antral condition has completely cleared up four months later without any local treatment.

Since the acetone has been controlled by glucose there has been only the mildest occasional cold with no evidence of bronchitis, which had previously been almost constantly present.

As in Case I, the important point is that the antral investigation was not undertaken during an acute exacerbation, but represented the chronic state extending over a number of years.

CASE III.—A female patient, aged thirteen years, complained of frequent colds for years. These were mainly confined to the head, but not infrequently extended to the chest. Between the colds there was a continuous watery nasal discharge. Investigations by an ear, nose and throat surgeon revealed an œdematous nasal mucous membrane and a thickening of the mucous membrane in both antra, more marked on the right side (see Figure V). An intranasal antrostomy was recommended. As the urine contained acetone it was decided to see the effects of glucose and an antiketogenic diet. Within two weeks the nasal discharge cleared up and during the nine months since commencement of treatment there has been only one cold, which occurred concurrent with an infection affecting all members of the household.

An X ray examination (Figure VI) made six months after treatment showed that the antra have returned to normal.

The blood count, when the child was first seen, showed a diminution in the red cells to 3,768,000 per cubic millimetre; this was purposely left untreated till the nasal condition had cleared up. Later, with large doses of iron, the count quickly returned to normal.

Cases I, II and III represent the changes associated with ketosis. In Cases IV to IX the patients all had subnormal blood sugar, and in some ketosis existed as well.

CASE IV.—The patient, a female, aged thirty-six years, complained of attacks of asthma almost every night. All the sinuses had been operated on and found to be chronically infected. An X ray examination of the chest revealed increased fibrosis.

The glucose tolerance test showed the following figures:

Fasting.	½ hour.	1 hour.	1½ hours.	2 hours.
0·062	0·093	0·123	0·093	0·093

Administration of glucose completely eliminated the asthmatic attacks.

CASE V.—The patient, a female, aged thirty-three years, complained of frequent colds and early morning headaches for many years. Clinical and X ray investigation of the sinuses revealed chronic antral disease, and examination of the chest revealed increased fibrosis with many adhesions at the right base, probably bronchiectatic.

The glucose tolerance test gave the following figures:

Fasting.	½ hour.	1 hour.	1½ hours.	2 hours.
0·073	0·113	0·156	0·122	0·109

The fasting sugar at another time was 0·068%. The headaches, which had not been relieved by sinus operations, have been completely absent since the administration of glucose.

CASE VI.—The patient, a female, aged thirty-seven years, complained of constant cough for many years. There was clubbing of all fingers. Clinical and X ray investigations of the chest revealed bronchiectasis at both bases. Operations had been performed on both antra and ethmoids for chronic infection. The fasting blood sugar on one occasion was 0·053% and on another 0·068%.

CASE VII.—A male patient, aged twenty-nine years, complained of frequent colds and sneezing attacks for as long as he could remember. Increased fibrosis of the lungs and chronic antral disease were present. The fasting blood sugar was 0·068%.

CASE VIII.—The patient, a female, aged fifty-two years, had had a chronic cough since childhood. Clinical and X ray investigations revealed marked increase in lung fibrosis and chronic infection of both antra. The fasting blood sugar on one occasion was 0·072% and on another 0·070%.

CASE IX.—A male patient, aged fifty-two years, complained of chronic cough with much sputum for many years. Clinical and X ray investigation revealed the presence of marked fibrosis of the lungs and chronic infection of all the nasal sinuses. This patient also suffered from typical attacks of acute hypoglycæmia. At

the end of a morning's work he would become very giddy and stagger about as if intoxicated. This was accompanied by a feeling of faintness and extreme exhaustion. The blood sugar was estimated at the time of these attacks, and on one occasion was 0·070% and another 0·072%. The administration of glucose caused a cessation of the hypoglycæmic attacks, but naturally no amelioration of the advanced chest condition.

Discussion.

At the outset it must be admitted that it is not known how the glucose acts, and any hypotheses put forward are admittedly speculative. Nevertheless, evidence points to the fact that the œdematous mucous membrane associated with these conditions is due to precipitation of hydrated protein particles of the blood in the area concerned. Many facts concerning the hydration of protein particles are well proved. Bayliss,[9] who deals with the matter from the purely chemico-physical standpoint, states that the degree of adsorption to the protein molecule is proportional to its surface. Hydration causes an increase in size of the protein particle in the blood and thus its adsorptive power for various salts and for glucose is increased, so that this change is associated, among other things, with a lowering of detectable glucose in the blood serum. The degree of hydration and dehydration of the protein molecule is changing from time to time, and the level of the blood sugar is apparently a guide as to whether hydration or dehydration predominates. A low sugar is found in association with hydration[10] and a high sugar with dehydration. Thus, by raising the blood sugar or increasing the store of glycogen, the process of dehydration is aided. Glucose then appears to dehydrate the protein particle in the blood[11] and at the same time to retain water in the tissues.[12]

In order to understand the possible rôle of hydrated protein particles in causing such widespread lesions, it must be remembered that a minute particle of an inert substance, for example, carbon, when injected into the blood stream might cause by precipitation such symptoms as vasomotor phenomena, congestion, hæmorrhages, more or less profound upsetting of the respiratory and cardiac rhythm, vomiting, diarrhœa, hiccoughs, glandular hypersecretion, convulsions, paralysis, difficulties of equilibrium, pruritus, urticaria *et cetera*. The substance injected is deprived of chemical action and can only act mechanically. In a similar way the enlarged hydrated molecule acts as a foreign body and may give rise to similar effects to the carbon particles. The injected carbon or hydrated protein particle can be precipitated in any part of the body and the symptoms will vary with the selected organ.

The precipitation of the hydrated protein particles by no means always takes place in the kidneys, leading to albuminuria. It not uncommonly causes in the brain coma and convulsions due to œdema, in the lungs pulmonary œdema, in the heart pericardial effusion, and in the abdominal viscera enteritis, enterocolitis or colitis.[13]

Taking this into consideration, it is not an unreasonable assumption to say that precipitation may also take place in the lining of the upper respiratory passages, giving rise to œdema of the mucous membrane. Consider then the effect on the respiratory tract of a constant state of œdema of the cells. First, in the upper respiratory area the nasal mucosa becomes congested, together with the lining of the sinuses, which are only a continuation of the former. This leads to frequent sneezing and watery nasal discharge—a boggy mucous membrane easily susceptible to infection. The openings of the sinuses become blocked by the swollen mucous membrane, drainage is impaired and infection is eventually superadded. Thus there develop, finally, chronically infected sinuses.

As stated above, similar changes are taking place in the linings of the bronchial tree and alveoli. This gives rise to a mild state of chronic bronchorrhœa, bringing in its train a more or less constant cough, with frequent acute exacerbations due to infection, which, as in the nose, is easily superimposed on the watery mucous membrane.

In the search for the cause of the chronic hydration, of which hypoglycæmia is a manifestation, McDonagh[14] has postulated an intestinal intoxication as playing a great part in the process. Millar[15] has also produced very strong evidence to show that both ketosis and hypoglycæmia are the result of damage to the liver caused by toxins from the intestine.

The almost constant association of chronic sinus infection with pulmonary fibrosis and bronchiectasis has been noticed by many observers, who claim that the sinus disease is the cause of the chest condition. There is no doubt of this constant association, but the explanation probably lies in the fact that in most cases both are the primary result of a common ætiological factor. It is true that infected sinuses may produce a secondary infection through inhalation of septic products and the beneficial results of antral operations in chronic cases may be regarded as due to amelioration of this factor. There are also those cases of bronchiectasis secondary to lung infections, such as unresolved pneumonia, which are not being considered at present.

If general treatment is commenced before the sinuses become infected, then much can be hoped for in the way of a cure. The completeness of this depends to a large extent on the degree of infection present. Seldom are the patients seen early enough to effect complete relief of symptoms, and much local operative treatment is undertaken, frequently with only little relief to the pulmonary lesion.

The fact that the condition can be relieved if treatment is instituted sufficiently early is shown by Cases I, II and III; Cases IV, V, VI, VII, VIII and IX demonstrate the later stages, in which infection has been superimposed in the sinuses and definite fibrotic changes have taken place in the lungs. In all these cases a lowered blood sugar was

found, but at that stage little relief should be expected. In spite of this, in Case IV complete cure of the asthma was effected by the use of glucose.

Glucose, besides its other better known functions in the body, possesses the most important one of dehydrating the protein molecule so that by its administration to persons with hypoglycæmia the process of dehydration is assisted.

The organism will not always react to a certain toxin or deficiency in the same way. Thus the alteration in bodily function or structure of which hypoglycæmia is a manifestation produces in one person cardiac changes, in another cerebral, in another gastro-intestinal, and in another changes in the respiratory system. Albuminuria may result from precipitation of protein particles in the kidneys, and we have under observation several patients with acetonuria in whom albuminuria, with normal renal function, can be controlled by glucose administration.

Summary.

1. Evidence has been produced in support of the view that hypoglycæmia and ketosis are important pointers to the underlying ætiology of at least some cases of chronic sinusitis and non-tuberculous pulmonary fibrosis. This underlying pathological change is probably a chronic hydration of the protein particles of the blood.

2. Three early cases with complete relief of symptoms and signs and six advanced cases have been recorded.

3. Many of the individuals who develop chronic sinusitis and pulmonary fibrosis have an exudative diathesis as the basis for the development of the lesions in the respiratory tract. Frequently this inability to retain water in the tissues is due to an insufficient supply of available glucose, as evidenced by hypoglycæmia or ketosis.

The blood sugar estimations were performed by the micro-method of Hagedorn and Jensen. Rothera's test was used in the detection of acetone and the percentages compared with standards prepared by dilution of acetone in urine. Percentages of 0·016 and higher all gave the strongest positive reaction.

References.

(1) G. M. Wauchope: "Critical Review: Hypoglycæmia", *The Quarterly Journal of Medicine*, Volume II, January, 1933, page 117.
(2) C. Sippe and J. Bostock: "Hypoglycæmia: A Survey and an Account of Twenty-Five Cases", THE MEDICAL JOURNAL OF AUSTRALIA, February 18, 1933, page 207.
(3) F. Wohlwill: Quoted by Wauchope, *loco citato*, page 129.
(4) K. Shirley Smith: "Nutrition of the Heart in Relation to the Electrocardiogram and Anginal Pain", *The Lancet*, March 25, 1933, page 632.
(5) C. Sippe: "Hypoglycæmic Angina: A Report of Five Cases", THE MEDICAL JOURNAL OF AUSTRALIA, September 2, 1933, page 302.
(6) M. B. Cohen and J. A. Ruddolph: "Allergic and Infectious Conditions of the Upper Respiratory Tract in Children: Differential Diagnosis", *The Journal of the American Medical Association*, Volume XCVII, October 3, 1931, page 980.
(7) K. Shirley Smith and R. A. Hickling: "Electrocardiographic Changes during Treatment of Severe Diabetes", *The Lancet*, March 5, 1932, page 501.
(8) C. P. Lapage: "The Exudative Diathesis", *The Lancet*, June 4, 1932, page 1274.
(9) W. M. Baylis: "Principles of General Physiology", Fourth Edition, 1924, page 106.
(10) J. E. R. McDonagh: "The Nature of Diseases Journal", Volume II, 1933, page 72.
(11) J. E. R. McDonagh: "The Nature of Diseases Journal", Part I, 1924, page 10.
(12) A. E. Garrod, E. Batten, H. Thursfield, and D. Paterson: "Diseases of Children", Second Edition, 1929, page 41.
(13) J. E. R. McDonagh: "The Nature of Diseases Journal", Volume I, 1932, page 46.
(14) J. E. R. McDonagh: "The Nature of Diseases Journal", Volume I, 1932, page 7.
(15) R. Millar: "So-Called Acidosis in Children", *The British Medical Journal*, December 16, 1933, page 1103.

A NOTE ON THE VENOM OF THE SYDNEY FUNNEL-WEB SPIDER, ATRAX ROBUSTUS.

By C. H. KELLAWAY, M.C., M.D., M.S., F.R.C.P. (London).
(*From the Walter and Eliza Hall Institute, Melbourne.*)

THE excellent recent article in this journal on spider bite, by Ingram and Musgrave,[1] has stimulated me to put on record some fragmentary observations on the venom of *Atrax robustus*, which I made in November and December, 1930.

Mr. Musgrave, knowing my interest in venom, kindly sent me half a dozen fine living specimens of this spider, among which both sexes were represented. They fed well on flies and, except one which died shortly after arrival, remained alive in my laboratory for more than two months. They were very aggressive and could readily be induced to bite the shaved fore or hind limb of a small animal placed within reach of their cheliceræ.

The results of a number of such "biting" experiments were surprisingly and invariably negative. On November 19 a rabbit weighing 1·5 kilograms was bitten on the shaved forepaw by a spider four times within a few minutes. It exhibited no signs of pain or discomfort after the bites and survived without presenting any abnormal symptoms.

On the same day two guinea-pigs of 250 grammes weight were bitten on the shaved hindquarters by other spiders. They showed no ill effects. Ten days later, on November 29, a rabbit weighing 1·57 kilograms was bitten by a spider three times on the right hind leg. The spider had been starved for three days before this, in the hope of increasing the toxicity of the venom. On the same day two guinea-pigs weighing 405 and 440 grammes respectively were bitten by two other spiders, the heavier animal being bitten twice. None of these animals exhibited any abnormal symptoms, nor was any local lesion discoverable at the site of the bite.

On December 3 five mice weighing between 12 and 20 grammes were bitten, two of them three times, four spiders being employed. None of these animals was affected in the slightest degree.

Finally, venom was collected separately from each of the five surviving spiders on two occasions separated by an interval of ten days. This was done by allowing the spiders to bite, as often as they would, a small weighed roll of carefully dried fat-free filter paper held within reach by forceps. The rolls, after being perforated by the cheliceræ and wet by the venom were dried *in vacuo* over

sulphuric acid and weighed. By difference the venom yields obtained for me by Miss Freeman on the first occasion were 2·1, 0·8, 0·2, nil and 1·3 milligrammes. The dried venom was extracted from the filter paper with distilled water and this was again taken to dryness *in vacuo*. From the two collections a total yield of 7·3 milligrammes of residue was obtained.

The venom so obtained was kept *in vacuo* and not tested till April, 1934, when it was dissolved in three cubic centimetres of distilled water and went into solution without any difficulty. Of this two cubic centimetres were injected intravenously into a domestic rabbit weighing 1·17 kilograms, and the remaining one cubic centimetre was injected under the skin of the abdominal wall in the same rabbit. Not the slightest effect was produced either generally or locally; the animal continued its interrupted meal and at no time thereafter showed any ill effects.

This method of collecting venom is open to objection, since the toxic constituents of the venom might be adsorbed to the filter paper and fixed or destroyed there. It would be preferable to allow the spiders to bite through thin rubber dam stretched over the mouth of a small crucible. The venom could then be dried *in vacuo* and sealed up in dry glass tubes till required.

These results are very remarkable in view of the deadly effects of the bite of this spider in man, four fatalities being recorded and several instances of recovery after extremely severe symptoms. The symptoms in man are those of overwhelming shock. There is a sharp local pain at the time of the bite, but this is not a dominant feature, and there is no local œdema of the bitten part. Shortly there are pallor, drenching sweat, collapse, with rapid, feeble pulse, vomiting and urgent dyspnœa. The pupils are contracted and there is paralysis of accommodation. Laryngospasm is not infrequent and death is attended by acute pulmonary œdema and cardiac failure. The similarity of this general picture to acute anaphylactic shock has been remarked.

These few observations are put on record in the hope that someone with ready access to fresh specimens of *Atrax robustus* may carry them further. The discrepancy between the results of a single bite in man and multiple bites in small laboratory animals may be reconciled by one of the following hypotheses.

1. That the rabbit, guinea-pig and mouse are all insusceptible to the venom of this spider. This is not so improbable as it looks at first glance, since of the common laboratory animals only guinea-pigs are reasonably susceptible to the venom of *Latrodectus hasseltii*. The effects of a single bite should be tried in monkeys and anthropoids.

2. That the spiders used in these experiments yielded much less venom than when freshly caught or that in captivity the venom is greatly decreased in potency. This seems unlikely, since they were active and aggressive and used their cheliceræ freely throughout the period of captivity. The killing power of *Latrodectus hasseltii* is not impaired by captivity.

3. That the symptoms and fatalities which result from the bite of this spider in man are due to acute anaphylactic shock from the injection of a protein to which the victims are sensitive. The bite seems so frequently to cause severe symptoms that it appears that a very high proportion of individuals must be sensitive if the symptoms are due to the anaphylactic response to the injection of an innocuous protein. There are several features of the recorded cases which are unfavourable to this view. The absence of any local œdema in the region of the bite and the occasional occurrence of symptoms such as priapism which are features of arachnidism and not of anaphylactic shock. The occurrence of fatalities following the bite of one species of spider in one particular geographical region makes it necessary to assume almost universal sensitiveness among the individuals bitten in that region to the protein in the venom of this species alone, which is incredible.

4. That the symptoms are due to a potent toxin produced by bacteria not invariably present in the venom of this species and with which our experimental spiders were not infected. It would be anticipated that many bites unattended by symptoms would occur by uninfected spiders, which is not the case.

Of these various hypotheses, in the absence of further evidence, I incline towards the first so strongly as to have no desire to test upon myself the toxicity of the venom by permitting a spider of this species to bite me.

Acknowledgement.

My thanks are due to Mr. Musgrave, of the Australian Museum, Sydney, for his kindness in providing me with living specimens of this spider, and to my colleague, Mavis Freeman, who helped me in my attempts to collect dry venom.

Reference.

(1) W. Wilson Ingram and Anthony Musgrave: "Spider Bite (Arachnidism): A Survey of its Occurrence in Australia, with Case Histories", THE MEDICAL JOURNAL OF AUSTRALIA, July 1, 1933, page 10.

LOUPING ILL VIRUS AS A POSSIBLE CAUSE OF THE X DISEASE EPIDEMICS OF 1917-1918.

By F. M. BURNET, M.D., Ph.D.
(*From the Walter and Eliza Hall Institute, Melbourne.*)

DURING recent years the virus responsible for a disease of sheep in Scotland, "louping ill", has been the object of much experimental work in Great Britain and America.(1) The disease derives its name from the ataxic circling and jumping (louping) movements which are its most characteristic symptom and which result from the cerebellar localization of the virus. Encephalitic

symptoms regularly follow experimental intracerebral inoculation of the virus in sheep, monkeys and mice. In the course of such laboratory work a considerable proportion of experimenters have suffered from an acute infection with encephalitic signs and have shown subsequently an appearance of virus-neutralizing bodies in their blood.[2] In all the cases so far recorded the disease in man has been relatively mild with no fatality or serious sequelæ. There is a certain amount of evidence that these human laboratory infections have taken place by droplet infection. Although in the sheep the natural mode of transmission is via the tick, mice and monkeys can be readily infected by intranasal instillation of the virus.

Louping ill has only been described from regions in Great Britain, particularly in Scotland, which are infested with the tick, *Ixodes ricinus*. No cases have been recorded from Australia. It may be significant, however, that the epidemic of human encephalitis in 1917-1918, which was known as X disease, was caused by a virus whose pathogenic action closely resembled that of louping ill virus. The latter is known to be infective for man, monkey, sheep and mouse, but not for rabbits. Cleland and Campbell[3][4] found that their X disease virus was similarly pathogenic for monkeys and for a proportion of the sheep tested, but not for rabbits. They did not test mice. The symptoms following intracerebral inoculation in the monkey, as described by Cleland and Campbell, are almost identical with those observed in the same species infected with louping ill. (Galloway: personal communication.)

Further, the rather extraordinary distribution of cases in regard to locality and season seems to find a much more reasonable explanation if the human cases were infected from an animal reservoir of the virus than on Cleland's hypothesis of human carriers.

The salient features of the epidemiology of X disease were:

1. The disease was geographically limited to areas in the far west of New South Wales and southern Queensland and the Broken Hill district, occurring almost simultaneously in regions between which there was no normal communication, except possibly via Sydney, where only one doubtful case occurred.

2. All ages were affected, but a large majority of the cases were in children.

3. The disease was strictly limited to the months of February and March in both the years 1917 and 1918.

The possibility of infection being derived from animals was, of course, considered by Cleland, but was discarded on account of the absence of any symptoms of disease in sheep or other animals in the districts involved. It is important to recognize, however, that in Scotland natural infection by louping ill virus is usually not apparent unless another infection, "tick-borne fever", is transmitted simultaneously by the infecting tick. Only when the two infections coexist does a sheep show the encephalitic symptoms which give the disease its name.

The tick *Ixodes ricinus* does not occur in Australia, and sheep ticks of any sort were not observed by Cleland in the districts involved at the time of his investigations. The only common ectoparasite of Australian sheep is the sheep-ked, *Melophagus ovinus*, but, as this remains all its life on the one host, it is unlikely to act as a vector of disease. If louping ill existed in the sheep at the time of the X disease epidemics, it was probably spread by some other agency from sheep to sheep and would therefore not be associated with another tick-borne infection.

One might discuss several possible modes of spread apart from the tick, but as this latter is the only known natural method by which louping ill is transmitted, it would hardly be useful to do so. It is clear that louping ill as observed in Scotland is not and could not be present in Australia. But it is by no means rare for a virus disease to have alternative vectors, for example, yellow fever can be spread by other mosquitoes than *Aedes ægypti*, and one form of rabies in central America is spread by vampire bats; while in regard to louping ill itself, the human laboratory infections were almost certainly via the naso-pharyngeal route and certainly not due to tick bite. The point to be stressed is that louping ill virus, if it were transmitted from sheep to sheep, by any means, might well produce no obvious signs of infection. Hence the fact that no disease of sheep was observed in the affected districts at the time, does not eliminate the possibility that X disease virus was derived from a reservoir of infection in these animals.

As a working hypothesis to account for the epidemiology of the disease we might assume that infection with louping ill virus or some closely related virus was widespread amongst sheep in western New South Wales, being spread perhaps via the nasal route or perhaps by biting flies from sheep to sheep without inducing encephalitic symptoms. It is possible that flies, either biting or non-biting, were mainly responsible for this spread, and rather highly probable that they were responsible for the infection of the human cases. A fly-borne infection might well account for three features noted by Cleland: the limitation of cases to the hot, dry season of late summer, the greater incidence amongst children, and the tendency for cases to occur amongst people living in unhygienic surroundings. There are several possible modes of fly transference: (*a*) from the infective nasal secretion of the sheep to the eyes or nose of human beings, particularly children; (*b*) by contamination of food; or (*c*) by inoculation of the virus if biting flies were the vectors.

It is fully realized that this conception of the ætiology of X disease is only an hypothesis and one difficult to prove or disprove in the absence of

a further outbreak of the disease. The most direct positive evidence would be to find that serum from survivors of the 1917-1918 epidemics showed neutralizing power against louping ill virus. Through the kindness of Dr. Tebbutt and Dr. Park one such serum was obtained and tested by Galloway against louping ill virus, and by Webster against St. Louis encephalitis virus. No neutralization was obtained with either. This negative result may mean either that another virus was involved or that any neutralizing power had disappeared in the sixteen years that had elapsed since the infection.

If louping ill virus was widely distributed amongst sheep in 1917 and 1918, it is rather unlikely that it has completely disappeared even after sixteen years. Evidence of its existence could be most readily obtained by the demonstration of virus-neutralizing bodies in the serum of a proportion of older sheep. This test can be readily carried out in mice if a standard strain of louping ill virus is available. It is likely that even if the great majority of cases in sheep were unapparent, any extensive prevalence of louping ill virus infection would result in some cases of symptomatic encephalitis. The virus might then be isolated from the brain, particularly the cerebellum of sheep showing such symptoms.

It is hoped that the publication of this note may stimulate the interest of country medical practitioners and veterinary surgeons in the possibility of louping ill infection being present in Australia. Any relevant data concerning, for example, the occurrence of encephalitic symptoms in people in close contact with sheep would be gratefully received by the writer.

References.

(1) J. R. Greig, A. Brownlee, D. R. Wilson, and W. S. Gordon: "The Nature of Louping Ill", *Veterinary Record*, Volume II, 1931, page 325.
(2) T. M. Rivers and F. T. Schwentker: "Louping Ill in Man", *Proceedings of Society of Experimental Biology and Medicine*, Volume XXX, 1932-1933, page 1302.
(3) J. B. Cleland, A. W. Campbell, and B. Bradley: "The Australian Epidemics of an Acute Polioencephalomyelitis (X Disease)", Report of Director-General of Public Health for New South Wales for 1917 (Sydney, 1919).
(4) J. B. Cleland and A. W. Campbell: "An Experimental Investigation of an Australian Epidemic of Encephalomyelitis, X Disease", *Journal of Hygiene*, Volume XVIII, 1919, page 272.

A SEROLOGICAL TEST FOR CANCER.[1]

By WARNFORD MOPPETT, M.D., Ch.M. (Sydney).
(From the Biophysical Laboratory, the University of Sydney.)

THE successful treatment of cancer either by radiation or surgical means is largely dependent on the question of early diagnosis, which assumes a fundamental importance. Apart from the economic and psychological factors which may bring under treatment the superficial and obvious case, there is urgent need for some reliable serological test for the detection of latent internal newgrowth. Much previous work has been related to the blood changes associated with extensive tissue necrosis or with cachectic conditions, and such factors could not be specific of cancer, whilst even as a rough guide they would apply to a late stage when treatment is of little use. The Bendien test, depending on the physico-chemical precipitation of blood proteins, appears to be a notable exception, and recent developments are very promising.[1][2]

An alternative approach is provided by the study of antibodies, on the lines of bacterial research, although the similarity between host and tumour cells is a fundamental difficulty, particularly in the spontaneous growth.

Lumsden[3] has established the existence of antibodies in the case of inoculated tumours of laboratory animals. For example, when a rabbit is treated repeatedly with a transplantable mouse cancer, anti-mouse group bodies and antimalignant bodies are formed and can be detected in the serum. The latter are characterized by a polyvalent toxicity to malignant cells grown *in vitro*, and recently they have been separated chemically from other antibodies in such a manner that the concentration or titre may be increased tenfold. The polyvalent character of antimalignant bodies provided strong evidence in favour of the existence of antibodies to spontaneous tumours.

Witebsky[4] has recently shown that cancer of a particular organ may be identified by serological means and a distinction can be made from the normal tissue of the organ presumably because of "malignant" bodies and antibodies.

The present work assumes the presence of such factors in the blood of the cancer patient. The method of observation, depending on the migratory movement of tumour cells *in vitro*, is exceedingly delicate, and in contrast to physical or chemical tests it may be termed purely biological.

Summary of Earlier Work.

Early experiments[5] were carried out with the spleen of the embryo chick growing in a hanging drop of amniotic fluid so as to provide a copious outward migration of cells of the lymphocyte class.

When a fragment of porous tile, previously soaked in glucose solution, was placed in the droplet near the tissue fragment, the symmetrical migration was disturbed, presumably in response to a concentration gradient of the added glucose.

Many other substances were tried and in every case there was a movement towards the tile (positive) for very small concentrations, whilst there was an indication of negative movement with high concentration.

The work was extended with the diffusion vessel shown in Figure I. The two terminal reservoirs were filled with saline solutions differing slightly in concentration, whilst the spleen fragment was placed in the centre of the narrow connecting channel. The apparatus was sealed and all outlying

[1] This work was carried out under the control of the Cancer Research Committee of the University of Sydney and with the aid of the Cancer Research and Treatment Fund.

cells were drawn, while further observations were made after two and twenty-four hours' incubation.

The previous results were confirmed and amplified, since there was a movement to the higher concentration (positive) when the medium was approximately isotonic, and negative movement when the absolute concentration was high.

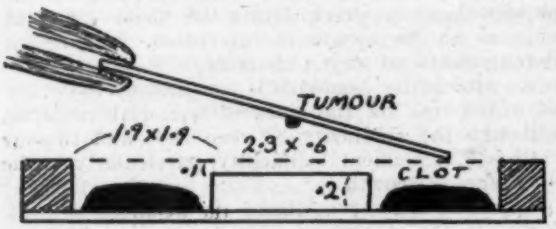


FIGURE I.
The diffusion vessel. The exposed fluid surface at each end is covered in the final paraffin sealing.

Chemical and mathematical investigation showed that the concentration gradient was of the same order for movement in either direction. Roughly, the difference in chlorine ion concentration on two sides of a lymphocyte was 0·000001%.

In the next stage[6] a mouse sarcoma (S 37 of the Imperial Cancer Research Fund) was placed in the central position, whilst two drops of blood from a normal and tumour-bearing mouse were placed in the reservoirs. It was assumed that humoral antibodies would be expelled from the clot to establish a gradient of concentration or titre in the normal saline solution with which the apparatus was filled.

Preliminary trials showed that there was no selective movement of cells with normal blood from different mice in each reservoir, but it was necessary to use drops of approximately the same size.

There was a definite migration to the tumour blood (positive) if the blood was taken from the mouse supplying the tumour fragment. Figure II shows such a result, the outlying cells, initially symmetrical, are displaced to the right with the appearance of long curved lines.

Movement took place in the opposite direction (negative) when the tumour blood was taken from a different animal to that supplying the tumour fragment.

A few mice were available which had been cured of an inoculated tumour by homogeneous X radiation, and by the disappearance of a coexisting untreated tumour they were apparently immune. The blood of such animals tested against normal blood gave no selective movement (neutral) except for an interesting slight reaction obtained when blood was taken before retrogression was complete.

Preliminary tests were made with blood from clinical material on the assumption that there might be some antigenic factor in common with the mouse tumour. Patients were chosen in advanced stages of cancer when the ratio of tumour material to body weight would be of the same order as of the tumour mice employed.

Previously a series of seven pairs of (normal) individuals taken at random was found to give a consistent neutral reaction. In every case four preparations were set up to check results and provide against loss by infection or poor migration.

A series of four pregnant women, taken approximately at the third month, when diagnosis is certain and the chorion is actively growing, were then compared against normal specimens as an additional control. The reaction of the tumour cells was again neutral, that is, any selective movement was too small to be detected with the technique employed.

FIGURE II.
Movement to the right from an initial central position.

Ten cancer patients were tested against normal human blood on the above lines. One experiment failed through infection, whilst eight showed a distinct negative movement similar to the heterologous mouse blood. One showed a positive movement like homologous mouse blood, and this was not due to an abnormality of the normal blood, as the donor, a nurse, was tested against two of the above negative series. Otherwise each batch of normal blood was taken from a different person.

Before proceeding with the description of a series of test diagnoses it is appropriate to emphasize the general significance of the above phenomena, which extend and to a certain extent confirm the work of Lumsden and Witebsky.

A test was made with normal and tumour-bearing mouse blood and chick spleen, but no selective movement took place. The migration observed is apparently associated with a reaction of the tumour cells to antimalignant bodies and represents the response of comparatively undifferentiated protoplasm to harmful (or beneficial) substances. The similarity of reaction obtained with blood from inoculated mice and from human subjects bearing spontaneous tumours appears to be of fundamental importance.

ILLUSTRATIONS TO THE ARTICLE BY DR. CLIVE SIPPE.

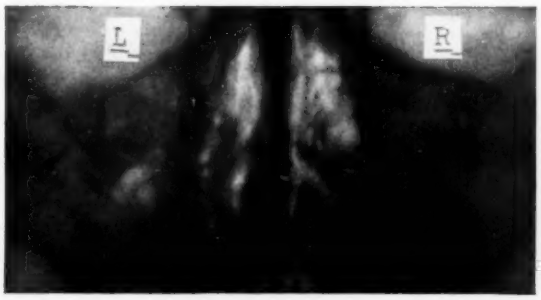


FIGURE I.

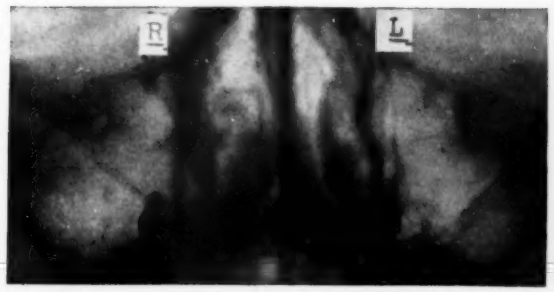


FIGURE II.

FIGURE III.

FIGURE IV.

FIGURE V.

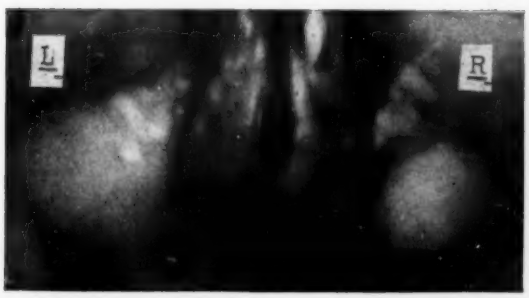


FIGURE VI.

ILLUSTRATIONS TO THE ARTICLE BY DR. M. P. SUSMAN.

FIGURE I.
Antero-posterior view of the knee joints of B.T.

FIGURE II.
Lateral view of the knee joints of B.T.

FIGURE III.
Right elbow joint of C.T.

Diagnostic Tests.

It would be desirable to detect newgrowth at an early stage, when it comprises one one-hundredth or even one one-thousandth of the body weight, and to this end the sensitivity of the test was increased by the use of larger measured quantities of blood (0·3 cubic centimetre taken from a vein).

The simplified technique[6] was employed, that is, the apparatus was filled (level) with saline solution and a small fragment of mouse sarcoma (S 37) was placed on a cover slip, which was gently inverted on to the diffusion vessel. A gap at each end (Figure I) provided for any slight error in filling and the final paraffin sealing followed any irregularity of the exposed fluid. As before, the position of the cancer blood was frequently reversed (relative to the order of closure), so that there might be no systematic error due to initial fluid displacement.

Tests were made in triplicate and drawings were made on setting up, and after one and after twenty-four hours' incubation. The two latter were employed for comparison of movement, because the first hour might involve initial disturbances, though it often gave an indication of the final result.

The increased sensitivity gave reaction with inflammatory conditions, as might be expected, and it was necessary to draw up some standard for grading the response. Figure III gives a rough guide to the classification adopted—commencing from the left, a control termed (zero), a movement to the right which is just discernible (slight), and then (medium), the two latter related apparently to inflammatory conditions. The next grade (strong) is characteristic of cancer and extreme reactions (very strong) are obtained with salt solutions and not with the antibodies in blood.

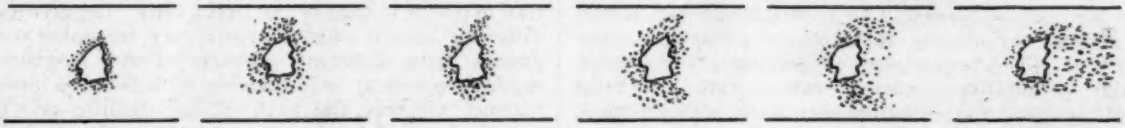


FIGURE III.
Showing initial position, zero, slight, medium, strong and very strong respectively.

As previously discussed,[6] the characteristic sweeping appearance is the best criterion of movement as opposed to unequal growth, and every conclusion must rest on two consistent experiments.

A considerable amount of skill is required and the subject is one in which unconscious bias might play a part. It was therefore decided that the clinical or pathological diagnosis should be withheld until completion of the test. The subjects were taken from the gynæcological clinic at the Royal Prince Alfred Hospital, Sydney, in order that an accurate diagnosis would be available when required for comparison.

In the accompanying table will be found a record of fifty tests, giving the degree of reaction, the number of consistent results (2/3, 3/3, 2/2), the opinion formed and the hospital diagnosis.

Discussion.

There are only two alternatives under consideration, cancer and non-cancer; and it is scarcely necessary to point out that a 50% success would be meaningless, as it might be obtained, for example, by tossing a coin. Two experiments were made with known cases of cancer as an initial trial, and of the following 48, 4 were excluded because from the causes indicated it was impossible to form an opinion. The remaining 44 show 27 right (diagnosis) and 17 wrong, giving a reliability factor of 27/44, approximately 60%.

This ratio is rather low, but nine errors (marked W[1]) appear to be avoidable in the light of further experience. Number 3 is obviously unsuitable and 4, 5 and 9 were recorded before one realized the need of grading the response, while 8 was a very small neoplasm. Numbers 21 to 24 comprise four advanced cancers which gave a negative result, although there was every indication of strong reaction in the first hour. There was evidence of cell poisoning arresting the migration, and it was found that the ether in which the glass parts were stored had become contaminated with xylol. The phenomenon was tested and confirmed with blood from tumour-bearing mice and a cinematographic record was obtained. Of the remaining eight errors, six represent an inadequate response (zero, slight *et cetera*) to an established cancer, possibly as the result of cell poisoning or a non-viable tumour fragment. It also seems likely that some human tumours would have no antigenic factor in common with the mouse sarcoma.

Five asterisks in the result column indicate movement towards the tumour blood, or in the opposite sense to that usually observed. In accordance with the previous papers,[5][6] these experiments were included, and it happened that they fitted in with the general result giving 3/5 correct. With further study this "reversed" movement, corresponding to homologous mouse tumour, may furnish an insight into the intricate question of immunity.

Conclusions.

1. There is some connexion other than chance between the results obtained and the presence of cancer.

2. A negative result to the test is of little value, the reliability being 15/30 in the whole series. As

Table showing Results of Tests.

Case.	Date.	Result.	Interpretation.	Hospital Diagnosis.
1	Trial	Strong 3/3*	Known	Carcinoma of the rectum, three centimetres.
2	Trial	Strong 3/3	Known	Recurring carcinoma of the cervix.
3	18/11/31	Zero 3/3	Normal, W.[1]	Carcinoma of the cervix; radium; stationary, six months.
4	10/12/31	Slight 3/3	Small cancer, W.[1]	Acute endometritis.
5	10/12/31	Slight 3/3	Small cancer, W.[1]	Pyometra.
6	16/12/31	Strong 2/3	Cancer, R.[2]	Carcinoma of the cervix, one centimetre.
7	20/1/32	Strong 2/2	Cancer, R.	Inoperable carcinoma of the cervix.
8	20/1/32	Zero 3/3	Normal, W.[1]	Malignant urethral caruncle.
9	10/2/32	Medium 2/3	Small cancer, W.[1]	Metritis, cysts in ovary.
10	10/2/32	Zero 3/3	Normal, R.	Normal.
11	24/2/32	Zero 3/3	Normal, R.	Normal.
12	2/3/32	Strong 3/3*	Cancer, R.	Squamous carcinoma of the cervix.
13	22/3/32	Infected		
14	13/4/32	Slight 2/3*	Not cancer, R.	Endometritis.
15	20/4/32	Strong 3/3	Cancer, R.	Squamous carcinoma of the cervix, 2·5 centimetres.
16	27/4/32	Zero 3/3	Not cancer, R.	Carcinoma removed, panhysterectomy three months ago.
17	11/5/32	Zero 2/3	Not cancer, W.	Extensive carcinoma invading rectum.
18	18/5/32	Strong 2/3	Cancer, R.	Pyometra; cancer; not verified by section.
19	25/5/32	Zero 3/3	Not cancer, R.	Chronic metritis.
20	25/5/32	Strong 2/3	Cancer, R.	Squamous carcinoma of the cervix.
21	1/6/32	Zero 3/3	Not cancer, W.[1]	Extensive pelvic cancer.
22	1/6/32	Zero 3/3	Not cancer, W.[1]	Extensive pelvic cancer.
23	8/6/32	Zero 2/3	Not cancer, W.[1]	Extensive pelvic cancer.
24	15/6/32	Zero 2/3	Not cancer, W.[1]	Extensive pelvic cancer.
25	6/7/32	Medium 2/3	Not cancer, ? inflammation, R.	Pyometra and pelvic inflammation.
26	6/7/32	Medium 3/3	Not cancer, ? inflammation, R.	Chronic metritis and fibroids.
27	13/7/32	Defective migration	?	
28	3/8/32	Medium 3/3*	Not cancer, ? inflammation, W.	Squamous carcinoma of the cervix, one centimetre.
29	3/8/32	Zero 3/3	Normal, W.	Squamous carcinoma of the cervix, two centimetres.
30	20/8/32	Slight 2/2	Not cancer, ? inflammation, R.	Fibroids.
31	24/8/32	Zero 3/3	Normal, W.	Inoperable carcinoma of the cervix.
32	24/8/32	Medium 2/2*	Not cancer, ? inflammation, R.	Fibroids
33	7/9/32	Strong 2/3	Cancer, R.	Inoperable carcinoma of the cervix.
34	21/9/32	Medium 2/3	Not cancer, ? inflammation, W.	Large fungating carcinoma.
35	5/10/32	Strong 2/3	Cancer, R.	Inoperable carcinoma of the cervix.
36	5/10/32	Strong 2/3	Cancer, R.	Inoperable carcinoma of the cervix.
37	19/10/32	Zero 2/3	Normal, R.	? Diverticulitis.
38	26/10/32	Strong 2/3	Cancer, R.	*Carcinoma vulvæ.*
39	10/11/32	Slight 2/3*	Not cancer, ? inflammation, W.	Carcinoma and syphilis.
40	16/11/32	Zero 3/3	Normal, R.	Chronic metritis.
41	16/11/32	Defective clot		
42	21/12/32	Strong 2/3	Cancer, R.	Inoperable pelvic cancer.
43	8/2/33	Strong 2/2	Cancer, W.	Chronic cervicitis and erosion.
44	8/2/33	Zero 2/2	Normal, R.	Normal.
45	8/3/33	Strong 2/3	Cancer, R.	Extensive carcinoma of the cervix.
46	15/3/33	Zero 2/2	Normal, R.	Non-malignant.
47	15/3/33	Infected		
48	21/3/33	Slight 2/3	Not cancer, ? inflammation, R.	Not cancer.
49	29/3/33	Zero 2/3	Normal, R.	Normal.
50	29/3/33	Strong 2/3	Cancer, W.	Panhysterectomy; not cancer.

[1] Avoidable error (see text). [2] W. = Wrong. [3] R. = Right. [4] Usually strong negative chemiotaxis.
* Reversed movement (see text).

indicated, further experience may raise the chance of success to at least 2 to 1, but, according to the antigenic hypothesis, there would always be some errors. (The preliminary clinical tests[6] showed a high reliability, because cases were carefully selected and no distinction was made between weak and strong reactions.)

3. A strong positive result[1] to the test is of definite practical value, the chance of success being 7 to 1. There were only two failures (43 and 50) and both may have been precancerous conditions.

Appendix.

A cinematographic record is desirable, not only for demonstration, but to gather facts which are not otherwise available. The curved line appearance previously mentioned (Figures II and III) results from the compounding of a uniform movement (from the tumour blood) with a centrifugal movement which diminishes with the distance from the fragment.[6] Actually all movements gradually slow down because the saline solution employed is not a satisfactory growth medium. Another characteristic appearance is that of cells separating out in the direction of movement and gathering in clumps on the opposite side of the fragment. A remarkable phenomenon sometimes observed is the stream of unorganized *débris* proceeding in a direction opposite to that of the living cells. The greatest difficulty occurs when there is very irregular outgrowth from different portions of the fragment, mainly because it is impossible with isolated observations to trace the path of one definite cell or group of cells.

Visual observation is carried out with a Spencer binocular microscope with 55-millimetre objectives, giving a non-inverted image. For photographic work this happens to be in a region between that of ordinary camera and the micro-camera, and no standard apparatus was available. After considerable delay it was possible to produce on sixteen-millimetre "Ciné" film an image which was the same size as the original object. Dark ground illumination was employed to take advantage of the high refraction of the tumour cells and the low scattering power of *débris* and stray red blood cells. The general arrangement will be clear from Figure IV and its legend without further description. It will be noted that one focused with the binocular microscope used for direct visual examination. Supersensitive panchromatic film was cut into twelve-foot lengths and arranged for daylight loading, and the apparatus was adjusted to give an exposure every two or three minutes, so that

[1] Usually strong negative chemiotaxis.

the events would be speeded up 2,000 to 3,000 times on projection. Unfortunately the bulky diffusion vessel was most unsatisfactory from an optical viewpoint, and corpuscles always escaped from the clot to produce some scattering. In the course of

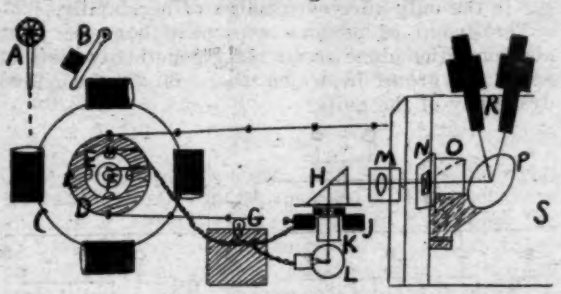


FIGURE IV.

A = water supply with wheel valve; *B* = trip mechanism with weight; *C* = wheel with four water buckets; *D* = pulley wheel; *E* = switch to operate lamp only during exposure; *F* = clutch to adjust motor in phase with camera mechanism; *G* = 24-volt transformer for light and heating, with pilot light; *H* = right-angle reflecting prism; *J* = Hearson hot stage with migration vessel resting thereon; *K* = dark ground condenser; *L* = illuminating bulb; *M* = supplementary lens to magnify image; *N* = glass plate with cross scratched thereon to facilitate focusing; *O*, *P* and *R* = prism, mirror and binocular microscope for examining image in focusing; *S* = ordinary "Ciné" camera for sixteen-millimetre film.

numerous preliminary trials it was found that the tumour cells respond quite well to different saline concentrations (although spleen cells do not respond to cancer blood). The film will be available shortly.

Acknowledgements.

I wish to thank Dr. H. H. Schlink and members of the hospital medical staff for assistance on the clinical side. I also appreciate the work of Mr. H. W. Chambers, the laboratory technician.

References.

(1) C. G. T. Bendien: "Specific Changes in Blood Serum", 1931 (translated by A. Piney).
(2) E. Cronin Lowe: "A Quantitative Modification of the Bendien Reaction in Sero-Diagnosis of Malignancy", *The British Medical Journal*, March 11, 1933, page 407.
(3) T. Lumsden: "Tumour Immunity", *The American Journal of Cancer*, Volume XVII, April, 1931, page 563.
(4) E. Witebsky: "*Disponibilität und Spezifität alkohollöslicher Strukturen von Organen und bösartigen Geschwülsten*", *Zeitschrift für Immunitätsforschung und Experimentelle Therapie*, Volume LXII, 1929, page 35 (abstracted in *Klinische Wochenschrift*, Volume IX, 1930, page 53).
(5) W. Moppett: "Chemiotaxis in Tissue Culture", THE MEDICAL JOURNAL OF AUSTRALIA, May 5, 1927, page 336.
(6) W. Moppett: "Observations on the Movements of Cells in Vitro with Reference to Tumour Immunity", THE MEDICAL JOURNAL OF AUSTRALIA, December 10, 1932, page 718.

RUDIMENTARY PATELLÆ, OTHER SKELETAL DEFECTS, AND DYSTROPHY OF THE NAILS.

By M. P. SUSMAN, M.B., Ch.M. (Sydney), F.R.C.S. (England),
Honorary Assistant Surgeon, Sydney Hospital.

IN some people the patella is rudimentary or absent, and in a certain number of them it is an inherited defect. There may or may not be other abnormalities as well, some of which are ectodermal and some mesodermal, such as the following.

Ectodermal Defects:
- Dystrophy of the nails.
- Ichthyosis.
- *Keratosis palmaris.*
- Hypertrichosis.
- Alopecia.
- Irregular eruption of the teeth.
- Mental deficiency.

Mesodermal Defects:
- Small scapula.
- Abnormal head of the radius.
- Congenital dislocation of the hip.
- *Coxa valga.*
- Enlarged femoral condyles.
- Enlarged tibial tubercle.
- Talipes.
- Dysplasia of various joints.
- Small stature in general.

The combination of ectodermal and mesodermal defects is probably not just fortuitous. It is possibly due to what geneticists call "linkage of factors"; sometimes linkage does not occur, so that some members of an affected family will have one kind of defect without the other.

E. Little, in 1897, described three persons with vestigial patellæ, and found reports of forty others up till that year. In addition to these, he cites a family in which eighteen members in four generations had defective patellæ and nails (Sedgwick). In 1912 A. Firth recorded two families with the combination of defective patellæ and nails; in one a mother and four of her eight children were affected, and in the other a mother and five of her eleven children.

W. Osterreicher found dystrophy of the nails with defective patellæ and luxation of the radii in some of the members of five generations of a family. W. Orel reports another family of which some members of four generations had dystrophy of the nails and luxation of different joints. All of these authors are quoted by E. A. Cockayne in his book, "Inherited Abnormalities of the Skin and Its Appendages". In a family reported by W. J. Rutherford, eight of eighteen members in two generations had aplasia of the nails. Four of the eight had also congenital knock-knee. The first recorded abnormal member of the family is the grandmother of the last generation; she had both conditions. None of the children of the normal members was affected, that is, transmission was in every instance direct from affected parent to child.

J. Turner has recorded the history of a family containing 39 members in five generations, 26 of whom had dystrophy of the nails, vestigial patellæ and dysplasia of various joints. He also describes a second family consisting of 41 members in four generations; 27 of them had dystrophy of the nails, but only nine had joint changes. Turner apparently thought that he was reporting a hitherto unknown condition; but it is clear that his patients were similar in all essentials to those of the authors named above.

Genetically this mesodermal-ectodermal abnormality behaves as a dominant trait; that is, it is transmitted direct from affected parent to child, and no generation is skipped. In most of the

affected families the female has handed on the trait much more frequently than the male; this is well shown in the family here reported. The pedigree chart also shows that unaffected members have no affected offspring.

Report of a Family with Dystrophy of the Nails, With or Without Skeletal Defects.

The defect common to the affected members of this family is dystrophy of some or all of the nails of the hands and feet. In the pedigree chart all these persons are represented as black circles or squares, according to sex. I have personally examined a female of the third generation and her two affected children; these three are indicated by a cross. All three are below the average height. None of them suffers any disability, nor do any of the other members of the family.

The first of these three (A.T.) has dystrophy of all her nails, without any bone or joint abnormality; she is fifty-three years old.

Her affected son (B.T.) is twenty-one years old; he has very dystrophic nails and tiny patellæ, clinically and radiographically. The tubercle of each tibia is enlarged and incompletely ossified, and there is a small exostosis on the right tibia. He engages in work and sport quite freely.

The affected daughter (C.T.) has dystrophy of the nails of the thumb and index finger only of each hand. Her patellæ appear to be normal. She lacks full extension of the right elbow by about ten degrees, and she has little, if any, supination of the forearm. The skiagrams show well the abnormality of the upper end of the radius. The left elbow and all the other joints appear to be normal.

Figure IV.
Hands of C.T. The nails of the thumb and index finger only are affected. All the nails of the mother and brother are affected.

The eldest female of the third generation is said to have defective movements of one elbow, but I have not had the opportunity of examining her. There are no known arthritic changes in any of the other members of the family.

Through the courtesy of Dr. F. C. Rogers, I recently saw a girl, aged eighteen years, who has vestigial patellæ. She differs from my patient in that: (i) the nails are normal; (ii) she is above the average height; (iii) she has a certain amount of disability owing to an obvious wasting of the thigh muscles, which is probably congenital; (iv) she is the only affected member of her family.

The group of persons who have bone or joint abnormalities alone seems to be genetically distinct from the group in which there is an associated dystrophy of the nails.

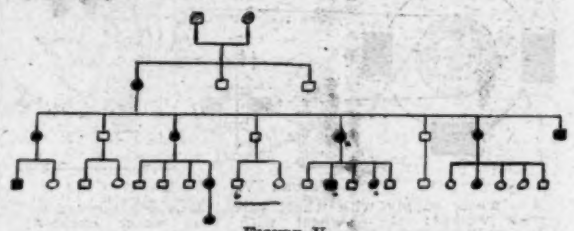


Figure V.
Key to the pedigree chart of a family, some members of which have dystrophy of the nails, with or without skeletal abnormalities. Unaffected males are represented by plain squares and unaffected females by plain circles. Shading means that no information is available. Affected males are represented by solid squares and affected females by solid circles. All the affected members are known to have dystrophy of the nails; it is not known certainly how many of them also have skeletal defects. A cross indicates those persons that have been personally examined. A wavy line means that the order of birth is uncertain.

Summary.

This is the report of a family, some members of which have dystrophy of the nails, with or without certain abnormalities of bones or joints. The trait seems to be transmitted as a dominant; but note that, although both sexes are affected, none of the affected males has yet had any offspring, so that it is not certain whether the trait is transmitted by both sexes or by the female alone in this particular family.

Bibliography.

E. A. Cockayne: "Inherited Abnormalities of the Skin and Its Appendages".
J. W. Turner: "Hereditary Arthrodysplasia Associated with Hereditary Dystrophy of Nails", *The Journal of the American Medical Association*, March 25, 1933.
W. J. Rutherford: "Pedigree of Hæmophilia", *The British Journal of Children's Diseases*, Volume XXX, January-March, 1933.

THE TECHNIQUE OF TAKING A BIOPSY IN RELATION TO THE MODIFICATION OF LIFE SPAN OF A TUMOUR-BEARING ANIMAL.[1,2]

By Elinor S. Hunt, M.B., Ch.M. (Sydney),
Sydney.

The object of this paper was to determine whether the life of a tumour-bearing animal is prejudiced by taking a diagnostic biopsy. Two methods were employed, the scalpel and electric cutting by means of a diathermy machine. It has been suggested on theoretical grounds that the latter method would be attended by less risk of dissemination owing to the coagulation of tissues and sealing of vessels.

[1] This work was carried out under the control of the Cancer Research Committee of the University of Sydney and with the aid of the Cancer Research and Treatment Fund.

[2] Read at the Fifth Australian Cancer Conference, Canberra, April, 1934.

An essential part of the investigation comprised the careful observation of controls.

There are many difficulties in obtaining reliable information from human material, and in preference mice were employed for an experimental investigation. The advantage with the latter was that larger numbers were available, results were obtained in a much shorter period, and the experiments could be carried out under standard conditions.

Technique.

An implanted tumour (S 37 of the Imperial Cancer Research Fund) was used, and though there appears a vast difference between this and the spontaneous tumours of man, there appears to be no difference as regards dissemination or similar factors which might shorten the expectation of life. The results obtained below, therefore, should be valid for clinical tumours. The present tumour strain was particularly suitable, owing to its high malignancy. The tumour from an affected mouse was dissected out with aseptic precautions and cut into small pieces under warm sterile saline solution. Soft pearly material was selected and each piece was inoculated under the skin of the back by a modified lumbar puncture needle. Batches of about thirty mice were inoculated and nine to ten days later they were divided into groups of three with tumours of approximately equal size. One of each group was marked as control, the other two after operation as biopsy and diathermy.

The smaller tumours presented special difficulties, as biopsy would amount to an incomplete surgical removal, and it was necessary to work on a very small scale.

In the biopsy a wedge-shaped piece of material containing tumour and normal tissue (to show invasive properties), was removed, and the edges were sutured with silk. There was usually much bleeding. The same wedge-shaped piece was removed by diathermy and the charred edges were sutured together in a bloodless field. The wounds in both operations were sutured, but in the case of the diathermy experiment care was taken to insert the needle in the narrow margin of coagulated tissue, in order that one would not introduce an element of surgical interference. The machine was of the general purpose type, with a frequency of 5,000,000 cycles, which resulted in a suitable combination of "coagulation" and "cutting". A needle point electrode was employed and with careful technique the histological detail was not obscured in any way (see Figure I). The so-called electric knife, which employs a much higher frequency, might be used if one did not require a coagulated margin for safe suturing, but mice are apt to eat one another if left with an open wound.

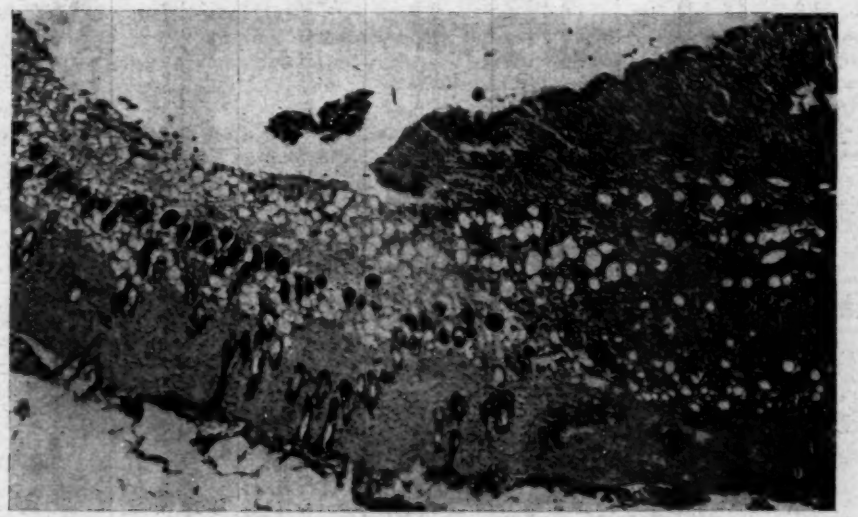


FIGURE I.
Diagnostic biopsy, obtained with diathermy technique. Sarcoma cells invading skin and subcutaneous tissues. Detail is not sacrificed by overheating.

Much difficulty was first met with in diathermy biopsy, the mouse being electrocuted or paralysed, due to a large current density in a small animal. Finally, the indifferent electrode, covered with cotton wool soaked in saturated common salt solution was attached by forceps close to the normal skin on the opposite side of the tumour. The mouse had previously been anæsthetized with ether and the tumour and surrounding skin had been shaved. When the diathermy needle was used the current ran across the small tumour area, and the mouse survived.

Results.

The results are recorded in Table I, which is divided into three columns for controls, biopsies and diathermies. The investigation with controls and biopsies was started several weeks before the

TABLE I.

Control.			Biopsy.			Diathermy.		
Size of Tumour at Operation. (Centimetres.)	Size Ten Days Approximately After Operation. (Centimetres.)	Life from Day of Operation. (Days.)	Size of Tumour at Operation. (Centimetres.)	Size Ten Days Approximately After Operation. (Centimetres.)	Life from Day of Operation. (Days.)	Size of Tumour at Operation. (Centimetres.)	Size Ten Days Approximately After Operation. (Centimetres.)	Life from Day of Operation. (Days.)
1·3	3·0	17	1·5	—	11 D			
1·5	—	Rx	1·5	4·0	14			
1·5	3·0	17	1·5	4·0	17			
1·2	3·0	17	1·0	4·0	14			
1·0	3·0	17	1·0	3·5	14			
1·5	—	11 D	1·5	3·0	20			
1·8	3·5	29	1·0	3·0	17			
1·0	3·0	17	1·0	2·5	14			
1·5	3·0	20	1·0	3·0	17			
1·0	—	Rx	0·5	2·0	20 x			
1·5	—	11 D	1·5	—	11 D			
1·0	3·0	17	1·0	3·0	14			
1·0	4·0	14	1·0	—	11 D			
1·0	—	Rx	1·0	3·0	17			
0·5	1·5	20	0·5	2·5	20	2·5	—	11 D
2·5	—	Rx	2·5	3·5	13	2·0	3·5	18
2·0	—	Rx	2·0	2·5	21	1·5	3·5	L
1·5	—	Rx	1·5	3·5	13	1·5	3·0	18
1·5	4·0	13	1·5	3·5	21	1·5	3·0	13
1·5	3·0	18	1·3	2·5	27	1·0	2·0	27
1·0	4·5	13	1·0	3·0	18	0·8	3·0	11
0·8	—	Rx	0·5	3·0	27	2·0	2·0	13
2·5	4·5	13	1·8	—	11 D	1·0	2·0	14
1·0	—	Rx	1·0	1·5	22	1·0	—	Dx
1·0	—	Rx	1·0	2·5	20	1·0	2·5	31
1·0	2·5	15	1·0	2·5	20	1·5	1·0	18
1·5	3·0	18	1·5	3·0	29	1·5	1·0	34
1·5	3·0	11	1·5	2·5	20	2·0	2·5	18
2·0	3·0	22	1·5	3·0	16	1·5	2·5	21
1·5	3·5	18	1·3	2·8	20	0·8	—	Rx
0·8	2·5	20	0·8	1·5	11	0·8	—	Rx
0·8	—	Rx	0·8	1·5	Rx	0·5	1·0	27
0·5	1·5	23	0·5	1·0	Rx	1·0	—	Dx
1·0	1·5	12	1·0	2·5	19	1·0	1·5	35
1·0	2·0	25	1·0	2·5	16	1·8	2·0	49
1·2	—	5 Dx	1·3	2·0	28	1·5	2·5	19
1·5	2·5	19	1·5	2·5	14	1·0	—	3 Dx
1·3	2·5	25	1·0	—	Dx	1·5	—	5 Dx
1·5	3·0	25	1·3	1·5	Rx	1·0	2·0	Rx
1·0	2·5	22	1·0	1·5	Rx	1·0	2·0	37
1·0	2·5	27	1·0	2·5	18	1·0	2·0	Rx
1·0	3·0	25	1·0	2·5	30	0·5	2·0	34
0·5	—	Rx	0·5	2·5	17	1·3	2·5	Rx
1·3	2·5	14	1·3	3·5	20	1·5	1·5	Rx
1·5	3·0	27	1·5	3·0	27	2·0	—	1 Dx
2·0	4·0	16				1·0	—	Rx
1·0	3·0	23				1·0	3·0	18
1·0	—	11 D	1·0	2·5	29	1·3	1·5	40
1·3	0·5	Rx	1·3	—	Rx	1·3	2·0	Rx
1·3	3·5	22	1·3	—	6 Dx	2·5	—	6 Dx
2·5	—	8 Dx	2·5	3·5	17	2·5	3·0	16
2·5	3·5	14	2·5	3·0	11	2·0	2·5	14
2·0	2·5	14	2·0	2·0	23	2·0	2·0	16
2·0	4·0	18 Rx	2·0	—	8 Dx	1·0	1·5	34
1·0	3·0	22	1·0	3·0	16	1·5	2·5	11
1·5	2·5	Rx	1·5	2·5	25	1·5	2·0	18
2·0	3·0	13	1·5	3·0	15	1·3	3·0	20
1·3	3·5	16	1·3	3·0	16	1·5	2·5	30
1·5	3·0	Rx	1·5	3·5	23	2·0	2·5	19
2·5	4·5	16	2·0	3·0	16	1·5	2·0	Rx
1·5	3·0	34	1·5	2·5	16	1·5	2·5	19
1·5	3·0	24	1·5	2·0	36	1·5	—	2 Dx
1·5	3·5	23	1·5	1·5	Rx	1·5	—	Dx
1·5	—	Ex	1·3	—	6 Dx	1·0	3·0	19
1·0	3·0	35	1·0	3·0	12	2·0	—	1 Dx
2·0	2·0	34				0·8	2·5	Rx
0·8	3·0	12						
Average *A*. 1·3	3·0 Total mice 182,	19·1 less 49 excluded.	1·3	2·9	18·5	1·4	2·3	22·6
Average *B*. (See text.) 1·3	2·9 69 mice excluded.	18·4	1·3	2·8	18·5	1·4	2·3	22·2
Average *C*. (See text.) 1·5	3·2 119 mice excluded.	17·7	1·4	2·7	18·9	1·5	2·4	21·9
Retrogression ..	8 67	(12%)	6 63	(9·5%)		10 52	(19%)	
Secondaries found Total *post mortems* (See Table II.)	36 59	(61%)	27 55	(49%)		17 34	(50%)	

x = Excluded. R = Retrogressed. D = Died. E = Eaten. L = Lost.

TABLE II.
Necropsies.

Control.			Biopsy.			Diathermy.		
Small.	Medium.	Marked.	Small.	Medium.	Marked.	Small.	Medium.	Marked.
LLL	LL	LLLL	LL	LL	LL	LL		
LLL	LL	LLLL	LL	LL	S	LL		(K, Lr and L)
LLL	LL	(L and Lr)	LL	LL	LLL	LL		LL
LLL	LL	LL		LL	LL	LL	LL	L
LLL				L	LLL	L		LL
LL					Lr			
17	8	11	6	9	12	9	2	6
Total with secondary deposits 36			Total with secondary deposits 27			Total with secondary deposits 17		
Total examined 59			Total examined 55			Total examined 34		
(61%)			(49%)			(50%)		

L = Lung. Lr = Liver. S = Spleen. K = Kidney.

diathermy machine could be obtained. In the first sub-column of each group is recorded the diameter of the tumour at the time of operation. In order to give an idea of rate of growth the diameter was also recorded approximately ten days later. Ten days was taken as a uniform time to include most of the early deaths.

The mice were kept till they died, and the days of life were recorded from the time of operation.

Forty-nine mice were excluded from the total of 182, as the animal was either lost, eaten, or died from causes other than the sarcoma, or the tumour itself had retrogressed. Retrogression in some cases started from the time of operation, but in more the tumour increased in size for several days and then gradually disappeared, leaving an apparently perfectly healthy mouse. Any mouse dying before the tenth day was discarded, as it was improbable that the malignant growth was the cause of death.

The data pertaining to the remaining mice were averaged in three different ways. In Series *A* all the mice not excluded were counted. It will be observed from the exclusions that the original pairing off was upset, and in case this might upset the validity of results, a further average was taken (*B*) in which any experiment was discarded, unless at least two mice out of each group of three survived. In Series *C* a more rigid exclusion was made, only groups of three complete experiments being left. The three methods gave sensibly the same results, Group *C* being rather small numerically. On the whole, Group *B* is the most reliable.

FIGURE II.
Secondary sarcoma nodule in apex of lung of mouse. Note the compression of adjacent alveoli.

Discussion.

The general conclusion is that within the limits of experimental error biopsy does not alter the expectation of life. Nor is the growth rate appreciably altered. There may be a little difference here, however, as the size of the biopsy tumour is practically the same as that of the control after an incomplete surgical removal ten days before; that is, biopsy may slightly increase the growth rate.

In the case of the diathermy biopsy, the growth rate is lessened, expectation of life is longer, and there are more cases of spontaneous retrogression. At first sight this might appear to be in favour of the latter method, but the slight difference is probably the result of a phenomenon known as concomitant immunity due to absorption of partially disintegrated tissues. This has little or no counterpart in the tumours of man. Hence one can only draw conclusions from the diathermy experiments by examining the incidence of secondaries.

Necropsies.

Table II, of necropsies, gives the *post mortem* findings in 148 mice. (Note: Fifteen mice excluded from the average in Table I were available for necropsy.) This is a less precise method of observation than that just given, but the results are sensibly the same. Table II gives only the tumours found *post mortem*, either by eye or microscope, but without doubt some secondary deposits were not found, either due to minute size or position in the brain *et cetera*. Many mice were lost or eaten by other mice or rats.

The 148 mice comprised 59 controls, 55 biopsies, 34 diathermies; secondaries were found in 36, 27 and 17, or 61%, 49% and 50% of these respectively. These percentages can be regarded as the same, taking into consideration experimental error. The secondary deposits were graded into small, medium and large, according to their frequency and size; and noteworthy was the large number of control mice which showed very small secondary deposits in the lungs on necropsy.

Secondary deposits were most frequently found in the lungs (see Figure II), but the spleen, liver and kidneys were also invaded in some cases.

Conclusion.

The present results indicate that a diagnostic biopsy is not a serious danger from the point of view of dissemination. Taking the necropsies into account, the alternate techniques are of equal value, since the slight advantage shown by diathermy in Table I would not apply in man.

An implanted mouse tumour differs in several features, such as the phenomena of concomitant immunity, from a spontaneous growth. The present conclusions should be valid, however, since the mechanism of spread is similar in both cases, and the present tumour strain was particularly suitable owing to its high virulence.

Of course these conclusions in no way invalidate the need for recognized precautions. For example, the biopsy should be followed without delay by radium treatment or surgical extirpation.

Moreover, the diathermy technique should be employed, since there are theoretical advantages, and histological results are quite good, although this work does not indicate any definite advantage.

Acknowledgement.

I wish to express my thanks to Dr. W. Moppett, who has suggested this line of work and helped throughout its course; to Watson and Sons, Limited, for the loan of the diathermy apparatus; and to Mr. Chambers, laboratory technician, for his valued assistance.

A REPORT ON THIRTY CASES OF "EVIPAN SODIUM" ANÆSTHESIA.

By J. S. MACMAHON, M.B., Ch.M. (Sydney), F.R.C.S. (England), F.R.A.C.S.,
Deputy Medical Superintendent, Royal Prince Alfred Hospital, Sydney,

AND

E. G. MACMAHON, M.B., Ch.M. (Sydney), F.R.C.S. (England),
Honorary Assistant Surgeon, Saint Vincent's Hospital, Mater Misericordiæ Hospital, Lewisham Hospital, Sydney.

DERIVATIVES of barbituric acid have been used for many years as hypnotics. Barbitone (veronal), sodium barbitone ("Medinal"), "Luminal", "Dial", "Allonal", "Proponal", "Gardenal", "Soneryl", "Phanodorm" and "Veramon" do not by any means exhaust the list.

In the course of their synthetic evolution more potent derivatives were produced, namely, "Sodium amytal", "Nembutal" and "Pernocton". These are all sodium salt derivatives. The sodium, among other advantages, renders the preparation more soluble and therefore capable of intravenous use. The disadvantage of these drugs is the comparatively low therapeutic quotient, that is, the margin between effective therapeutic dosage and toxicity is small. The therapeutic quotient or margin of safety of "Luminal" is 1·3, barbitone 1·6, "Soneryl", "Nembutal" and "Phanodorm" 2·4, and "Dial" 2·5. They cannot, therefore, safely be pushed to their full therapeutic effect, but are used as pre-operative basal narcotics, to be supplemented by a general anæsthetic.

"Evipan Sodium", the most recent addition, is a further improvement, having a quotient of over 4·0, and can therefore safely be pushed to complete anæsthesia. It is too evanescent in its action to be suitable as a basal narcotic. The modern trend in anæsthesia seems to be towards the intravenous route. Inhalation anæsthetics are still the safest and most generally useful, but the ideal drug has not yet been discovered. It will probably be administered by the intravenous route.

Pharmacology.

"Evipan sodium" is the sodium salt of N.Methyl-c-c cyclo-hexenyl-methyl barbituric acid. It is a white crystalline powder, freely soluble in water, but the solution is stable only for an hour or two. The anæsthetic action of the drug is rapid in onset and short in duration. It is not a volatile anæsthetic, but is rapidly detoxicated by the liver. Rabbits

decompose half the narcotic within thirteen minutes. Traces of the unchanged substance are evident in the urine.

The blood sugar and blood urea are unaltered, and other evidence of its effect on body metabolism is of the slightest.

Therapeutic Effects.

The patient passes rapidly into the third stage of anæsthesia, the pupils being moderately dilated and active to light. The majority of patients fall asleep perfectly quietly in fifteen to twenty-five seconds. A deep yawn may precede the disappearance of consciousness. Twitching of face muscles and jactitation of limbs are not uncommon, but last only a few seconds (stage of excitation). Complete muscular relaxation, if required, can be obtained. The jaw and tongue become relaxed, and care must therefore be taken that a satisfactory airway is maintained.

There is an initial fall of blood pressure of about twenty to thirty millimetres of mercury, but it rapidly returns to normal.

After-Effects.—The vast majority of patients awake refreshed, as from a natural sleep, with no headache, feeling of lassitude or nausea. Restlessness is an occasional sequel, lasting up till an hour. When two to three cubic centimetres have been injected consciousness is regained in five minutes.

Toxicology.

There are three recorded deaths out of many thousands of cases; two of these occurred in England last January. "Evipan" is a respiratory depressant, necessitating a careful watch over the patient. Apnœa occasionally follows its administration, but has not been alarming in our limited experience.

Method of Resuscitation.

Clear the airway. Resort to artificial respiration with inhalation of 5% carbon dioxide in oxygen or of carbon dioxide from a sparklet resuscitator. Use an injection of lobeline if necessary.

The usual syndrome of poisoning with barbitone and its allied drugs, namely, prolonged coma with diplopia, extensor plantar response *et cetera*, ending in pulmonary congestion and pneumonia, does not seem to ensue, on account of the evanescent action of the drug.

Contraindications.

"Evipan Sodium" is detoxicated by the liver, and theoretically therefore should not be used in conditions of deranged liver function, such as cirrhosis or jaundice; otherwise contraindications are the same as those for any general anæsthetic.

Technique.

Preliminary narcosis by means of "Omnopon" 0·04 gramme (two-thirds of a grain) and scopolamine 0·43 milligramme (one one-hundred-and-fiftieth of a grain) may be given one hour before operation for adults. This practice is condemned by many, on account of the increased risk of respiratory failure.

Bayer and Company supply two ampoules, one containing 10·5 cubic centimetres of distilled water, the other one gramme of the powder. The ten cubic centimetres of the water are drawn up into a ten cubic centimetre syringe, which is then emptied into the ampoule containing the powder. By aspirating and emptying the barrel of the syringe several times the powder is readily dissolved. The solution is now ready for use. Since the duration of anæsthesia with "Evipan" is short, it is desirable that the surgeon be gloved and ready to commence the operation before the injection is given. The arm is held by a second person and the solution is injected into the median basilic vein at the elbow, with due aseptic precautions. A fine needle should be used, and it is wise to converse with the patient during the initial administration, as its effects can thereby be readily gauged. The first two to three cubic centimetres are given fairly quickly, and then there is a pause of fifteen to thirty seconds, at the end of which time the patient is usually fast asleep. A further number of cubic centimetres are given at the rate of one cubic centimetre in fifteen seconds. The surgeon should wait one to two minutes after the administration has ceased, otherwise reflex movements may occur, even though the patient is unconscious, apparently in the third stage of anæsthesia.

Dosage is determined by the characteristics of the patient, the results noticed, and the estimated length of the contemplated operation. Its effect on people is variable, and consequently a dosage determined by body weight and sex is unsatisfactory. Roughly speaking, twice the amount required to promote unconsciousness is required for a short operation (ten minutes) and three times the amount for a longer one (twenty to thirty minutes). Should the anæsthesia show signs of becoming light, a further injection can be given. It is recorded that twenty-eight cubic centimetres were given to a single patient without any untoward effect.

Reports of Cases.

The cases reported in this series number thirty. They are as follows:

1. *Minor Operations.*—There were seventeen minor operations.

Dental extractions were five cases; the dosage was two to four cubic centimetres. All the patients were able to walk unattended in thirty minutes.

Reduction of fractures. There were five cases of Colles's fracture. The youngest patient was fourteen years old and the dose was three cubic centimetres. The oldest patient was sixty-three years and the dose was three cubic centimetres. There were three cases of Pott's fracture; the dose was five to six cubic centimetres. Slinging of a fractured neck of the femur was carried out in a boy aged thirteen years; the dose was six cubic

centimetres. Induction was uneventful; restlessness occurred during recovery. He has had experience of ether previously and has asked for "Evipan" in future.

Removal of nails (perionychia). There were three cases; the dose was 3·5 cubic centimetres.

In three of these cases it was necessary to have the assistance of a restraining pair of hands, but no patient has any recollection of interference.

2. *Endoscopic Examinations.* Endoscopic examination was carried out in three cases. In two of these cases sigmoidoscopy was carried out; in one case cystoscopy was performed. The dose was 6·0 to 7·5 cubic centimetres. All three patients had received preliminary narcosis.

3. *Short Major Operations.*—Preliminary narcosis was adopted before some of the major operations; the drugs used were "Omnopon", 0·04 gramme (two-thirds of a grain), and scopolamine, 0·43 milligramme (one one-hundred-and-fiftieth of a grain).

Thoracotomy for empyema was performed on one patient, who received an injection of five cubic centimetres. The full dose of ten cubic centimetres was given in all the other cases, as follows:

Appendicectomy was performed in three cases.

Sympathectomy (presacral) was performed for dysmenorrhœa in one case.

Tonsillectomy was performed in one case.

Reflexes returned before completion of the operation, but there was no serious hindrance. Consciousness returned in half to three-quarters of an hour, and the patients dozed for a further period up to sixty minutes.

In certain cases no preliminary narcosis was used:

Appendicectomy was performed in one case.

Excision of piles was performed in one case.

Partial mammectomy was performed in one case.

Fistula-in-ano was operated on in one case.

We do not consider "Evipan" a suitable anæsthetic for abdominal operations, on account of the impossibility of foretelling the duration of the operation. It is not in the best interests of surgery to work against the clock. True, the drug can be repeated, but fluctuation in the depth of anæsthesia is a serious drawback.

Many of the minor complications which occur during the administration of "Evipan" anæsthetic can be explained by errors in technique, the most common being a too slow or too rapid rate of injection.

Conclusion.

"Evipan", administered with caution, is a useful drug for minor surgical procedures, where the possibility of slight reflex movements is not a matter of great concern. It is a pleasant anæsthetic, with, as a rule, no after-effects. It is not suitable for abdominal operations.

Bibliography.

R. Jarman and A. L. Abel: "Evipan: Intravenous Anæsthetic", *The Lancet*, July 1, 1933, page 15.

Report from the Anæsthetics Committee, *British Journal of Anæsthesia*, October, 1933, page 23.

Editorial, *The Dental Record*, March, 1934, page 144.

Reviews.

PROGRESS IN MEDICINE.

THE appearance of the seventh edition of "Recent Advances in Medicine", by G. E. Beaumont and E. C. Dodds, is assured of an excellent reception.[1] The fact that there have been seven editions of this work in ten years not only indicates the popularity of these authors, but registers also the rapid advances made in medicine during this time.

The new edition contains more than one hundred pages of fresh material, and by the elimination of certain methods which have not stood the test of time, the size of the book has been kept within comfortable limits.

The more recent work on the sex hormones is fully dealt with and the vitamins are also described. Reference is made to the association of parathyreoid tumours with changes in calcium metabolism.

The perplexed subject of nephritis is well handled, the disease being described under the headings of: (i) acute nephritis, (ii) acute nephrosis, (iii) subacute nephritis, (iv) chronic nephritis with œdema, (v) chronic nephritis with slight or without œdema, and (vi) mixed types of nephritis. Renal function tests are fully dealt with and include the urea clearance test developed by Moller, MacIntosh and Van Slyke. The significance of casts in the urine merits a special chapter.

The authors deal with the more recent estimations of the carbohydrate content of foods as shown by McCance and Lawrence, and also the high carbohydrate, low fat and low caloric method of treating *diabetes mellitus*. Tests for respiratory function and the authors' opinion of their merits are included. The pneumothorax and "Sanocrysin" methods of treatment of pulmonary tuberculosis are again described, and there is a chapter on the latest method of treatment of coal gas and cyanide poisoning with intravenous injections of methylene blue. Agranulocytosis and its treatment with pentnucleotide are described.

This edition compares favourably with its predecessors, and senior students and practitioners will find it a most useful medium for acquiring a knowledge of the recent advances in medicine.

FOOD AND ITS COOKING FOR CHILDREN.

"NURSERY NOURISHMENT", by Margaret Buchanan, is something quite new in recipe books, in that it contains recipes that are all suitable for children.[2] Although written primarily for little people, most of the recipes would suit any average family. The book is well arranged, different classes of foodstuffs being grouped together, and all the directions are easy to follow. The many little hints how to make plain, wholesome food attractive will be invaluable to mothers.

At the end of the book diets for children of different ages are given, with a number of daily menus. Many children rebel against their food because they are bored with the sameness with which it is cooked and served. This book will solve the mothers' problems and should also be purchased by all those who have to cook for invalids.

[1] "Recent Advances in Medicine: Clinical, Laboratory, Therapeutic", by G. E. Beaumont, M.A., D.M., F.R.C.P., D.P.H., and E. C. Dodds, M.V.O., D.Sc., Ph.D., M.D., F.R.C.P.; Seventh Edition; 1934. London: J. and A. Churchill. Demy 8vo., pp. 504, with 58 illustrations. Price: 12s. 6d. net.

[2] "Nursery Nourishment", by M. N. Buchanan, with foreword by R. Hutchison, M.D., F.R.C.P.; 1933. London: Edward Arnold and Company. Crown 8vo., pp. 104. Price: 3s. 6d. net.

The Medical Journal of Australia

SATURDAY, MAY 26, 1934.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction, are invited to seek the advice of the Editor.

MIND AND MEDICINE.

THE practice of medicine has undergone enormous changes in the last twenty or thirty years. During no period has the practitioner found it so necessary to follow the advances of the laboratory worker and of the clinician—the practitioner of twenty years' standing would be in parlous plight were he to restrict his therapeutics to the usages common to the days of his graduation. *Diabetes mellitus* will probably come first to the mind of anyone thinking along these lines; the outlook of the diabetic, particularly of the child diabetic, is infinitely better than it was two decades ago. The anæmias, though they require further elucidation, have been robbed of much of their terror. General paralysis of the insane, formerly the most hopeless of mental diseases, is not so prevalent because of the more careful and efficient treatment of syphilis in its early stages; and when it does become manifest, it responds often in a striking way to malarial therapy. Many other conditions on which a flood of light has been thrown might be mentioned—rickets and other deficiency diseases, tuberculosis, urinary infections, diseases of the thyreoid gland, and so on—but there is no need to attempt a complete enumeration. If we turn to therapeutic agents, we find the same advance—the use of radium and X rays in the treatment of malignant disease, of insulin in diabetes, of quinidine in cardiac conditions, of blood transfusion in hæmorrhage and shock, of serum in poliomyelitis, of parathormone in tetany, of adrenaline and ephedrine in spasmodic asthma, to mention merely a few. Again, the development of basal anæsthesia following on the elaboration of the barbitone derivatives has placed in the hands of clinicians a powerful weapon in the elimination of fear of surgical operation.

With these advances and new discoveries the clinician has consciously or unconsciously paid more attention to the cause of disease and less to its symptomatic treatment. Everyone will admit that this is the proper, the more scientific, form of therapy. At the same time it must be agreed that symptomatic treatment will never be entirely eliminated. Every undergraduate is taught that the cause of disease should be removed. When this statement is made, however, it does not mean that treatment is to be directed solely to the disease; the patient, as the sufferer from the disease, must be treated and not the disease itself. There is a danger that, when a powerful remedy is known to be efficacious in a certain disease, the patient may be treated by rule of thumb and not as an individual. When the disease and not the patient is treated, the factor most usually lost sight of in the causation or aggravation of the complaint is the mental factor.

It may be said, and with justice, that all this is elementary and well known. It will be useful to remember, however, that comparatively little is known of the mental process in disease. We know that worry over an illness will aggravate it; we know that in certain circumstances a hopeful outlook, cheerful surroundings and therapeutic suggestions will help to cure the patient. We know little more. Everyone will agree that man cannot by taking thought add one cubit unto his stature; but how far, if at all, a mental process may predispose to, or actually cause, a morbid change is not known. Until more is known of the influence of the higher centres on the circulation, on the endocrines, and so on, no progress in this direction will be made. We must remember that man has been known to die of fear alone. We must remember

also that life at present is strenuous, that many people are faced with difficulties to which they are unaccustomed, and that these difficulties take their toll of the nervous system. All that we can say at present is that the mental outlook of the patient in any illness must always be considered; in fact, a mental factor should always be sought. When mental treatment is necessary, and it is necessary oftener than is commonly believed, treatment must not be merely symptomatic. It is no use telling a patient whose illness is aggravated by worry or anxiety that he should not worry. It is no use sending him for a holiday, or making him play golf, or take to yachting, if he is still to be worried or anxious. The same principles must be adopted as with disease resulting from a demonstrable pathological process; the cause of worry, anxiety or depression must be discovered and, if possible, removed.

Current Comment.

THE STRAIN OF PREGNANCY.

ONE of the most weighty prognostic opinions asked of the practitioner of medicine is that concerning the ability of a woman to cope with risks of the gestation period in the presence of serious organic disease. Among the various problems arising out of this question is the management of the diabetic during pregnancy; this is fortunately not a very frequent event, but is destined to become more common. A more familiar difficulty concerns the woman who is the subject of organic heart disease. These particular questions have been the theme of two recent communications, the first of which deals with the outlook of the patient with cardiac disease during and after pregnancy. In this A. E. Lamb has studied a series of fifty women with proven chronic cardiac disease; these are drawn from a total of 2,193 patients admitted to the obstetric clinic of the Brooklyn Hospital over a period of four years.[1] Adequate examination of the circulatory system was made, and reinforced by radiological study, for it was recognized that the diagnosis of actual cardiac affections of the organic type is not always simple during pregnancy, owing to the dislocation of the heart by upward pressure, the raised pulse rate and other factors. Where at all possible a follow-up of the patients has been made; this has proved of great value from the diagnostic point of view as well as the prognostic, for in a number of cases a murmur heard at one of the valvular areas has been found to disappear after the puerperium. Cases of this kind may be easily, though falsely, included in statistical surveys of heart disease. The patients were graded in three classes, those with organic heart disease able to carry on ordinary physical activity without discomfort, those unable to do so unless the activity were limited to a slight extent or to a considerable extent, and those who presented definite signs of failure even at rest. The majority of the lesions observed were of rheumatic origin, and the commonest was mitral stenosis; mitral insufficiency was recognised as a separate lesion, but no cases were observed showing decompensation. This once more emphasizes the great importance of mitral stenosis as a crippling form of heart disease. Pardee in a similar investigation found that the outlook of the groups either completely tolerant of ordinary activities or tolerant with a certain degree of limitation, was very good. Lamb is not so optimistic, for in five of his cases of this type a breakdown of the circulatory reserve occurred. He points out, however, that it is not sufficient to make a rigid functional classification, but that it is also necessary to take heed of such factors as the age of the patient, her family and economic circumstances, and the duration and severity of the anatomical lesion. Where a breakdown occurred, it was usually before the onset of labour, and there was no essentially dangerous epoch during the gestation period. One very interesting observation was that of the patients who died (a total percentage of 7·5), only a little over 2% succumbed while having the routine care of the clinic; but the mortality was no less than 20% among patients seen for the first time when the heart was failing. In other words, prenatal care immensely reduced the mortality rate—a practical lesson which should be underlined with all emphasis. Only a limited follow-up was made after delivery, but it was found that nearly half the patients were definitely worse after their ordeal. Everyone will agree with the author when he says that further accurate follow-up work is needed to find out just what happens to these patients and their babies.

As regards the diabetic expectant mother, G. G. Duncan and F. Fetter, in a brief but careful study of six pregnancies in five diabetics, come to the following provisional conclusions.[1] They think that there is reason to believe that careful control of the mother will prevent undue demands upon the fœtal pancreas, and that the mother herself is not subjected to undue risk, provided she is well managed. They thus do not consider that diabetes *per se* is a contraindication for pregnancy. They find that the most stable period is the middle third of the gestation term; the first trimester is one of instability and readjustment, and usually demands an increase in the insulin dosage; then ensues a more constant three months, followed by the terminal stage, in which once again more insulin is required. Ketosis is most likely to occur in the early

[1] *The American Journal of the Medical Sciences*, February, 1934.

[1] *The American Journal of the Medical Sciences*, March, 1934.

and late months. After delivery the insulin requirements fall off suddenly, and hypoglycæmia is more likely to occur. All the babies in this series were alive and well, and their mothers did not suffer any aggravation of their disease. This rather optimistic report is quite in keeping with other findings on the subject, and will give heart to those who have to care for the diabetic patient under such conditions of anxiety. The whole of the practising profession must make contact with diabetes and heart disease, and not the least important aspects of these causes of disability are those touching the very springs of life.

COOKING AND CHEMISTRY.

IT is freely acknowledged that despite the attention showered upon unusual or intricate subjects the common things of life are too often neglected by medical investigators. One of these familiar topics, the influence of climate upon health, has been referred to in these pages. Another is the domestically evergreen, if scientifically neglected subject of cooking. The Medical Research Council has published the observations of R. A. McCance and H. L. Shipp upon the chemistry of flesh foods and in particular the losses sustained on cooking.[1] Part of this report concerns the analytical methods adopted in the chemical examination of such foodstuffs as meat and fish, and a study of these will certainly be of great assistance to workers in the field of nutritional chemistry. Using the described methods, the authors present tables of analyses of these foods. These will be of interest only to experimental biochemists in this country, and cannot be utilized *in globo* for exact work, for the composition of foods will not necessarily be the same in Britain and in Australia, nor indeed are the same foods used to similar extents in the two countries. But most interesting to the average medical or even lay reader is the section which sets forth the losses brought about by the cooking of meat foods. The authors remark that "cooking plays such a prominent part in our daily life that it is very curious how little we really know about it". In studying cooking losses McCance and Shipp have not taken into account palatability; they have merely ascertained the changes by shrinkage, concentration or actual loss that go on during the culinary processes. The theory of Liebig, that a pellicle of coagulated protein was formed on meat at reasonably high temperatures and that thereby subsequent losses were minimized, comes in for some rough handling. In spite of universal acceptance, at least by culinary authorities, it appears that there is little to support it. Even if a pellicle is thus formed, it can hardly be a bar to diffusion, as McCance and Shipp point out; it cannot be a semi-permeable protoplasmic membrane, for as such it would be destroyed by heat. Further, the shrinkage that occurs after prolonged cooking would cause distortion and consequent leakage from within. Of course, it is well known that meat is a poor conductor of heat, and that the internal temperature of a roast joint, for example, rises very slowly. But at whatever rate the temperature changes proceed, the loss of bulk is due to shrinkage of protein and the expression of juices, containing chiefly salts and water. Such shrinkage is most marked with beef and mutton, fish is less affected, and egg protein does not shrink at the boiling point of water.

High temperatures, those above 100° C., accelerate the shrinkage rate somewhat; the cooking of the meat in the absolutely fresh state lowers it. The authors have investigated and discussed the effects of reaction upon this weight loss in cooked meat, and suggest that although the practical domestic value of such observations may be slight, they might be used as a method of inquiry into protein chemistry. However, it should be noted that salt loss will occur by simple diffusion when meat is immersed even in cold water. The method of cooking, as might be expected, has a considerable bearing upon the end-result. Roasting and grilling are associated with considerable loss by evaporation, but the loss of salts is reduced, since these are retained on the surface of the meat. Salt loss is still further reduced by frying in deep fat, for water evaporation here takes place very rapidly. Protein loss is slightly greater with boiling than steaming, and rises with the temperature. The loss of fat is little affected by change in the protein, but occurs simply through liquefaction by heat.

Much of this work simply reveals the mechanism by which the changes incident upon cooking actually take place. But even so it is interesting, and some of the practical considerations of these authors are worth quoting. For example, it will be evident from the above that there is no particular economic advantage in cooking by steam by any variety of pressure cooker. To conserve salts in fish, however, steam cooking should be used. In the case of any but small pieces of meat the salt losses are not altered appreciably, whether the cooking is carried out in steam or water; they are, however, increased slightly by cooking in an electric oven or roasting under a cover, though the conservation of water tends to make the meat more juicy. When water cooking is used, the initial temperature makes little difference to the losses in the finished product, as above indicated.

As regards digestibility, the writers quote authorities against the common belief that underdone meat is more nutritious than that which is fully or overcooked, though it has the definite advantage of being more economical in serving at table. Of course, the scope of this investigation is avowedly restricted and has not included such questions as vitamin content or palatability; the latter, and indeed all psychological aspects of food preparation, in the oft-quoted words of Kipling, is another story.

[1] R. A. McCance and H. L. Shipp: "The Chemistry of Flesh Foods and their Losses on Cooking", Medical Research Council of the Privy Council, Special Report Series, Number 187; 1933.

Abstracts from Current Medical Literature.

DERMATOLOGY.

Epidermomycosis and Flat-Foot.

DAVID LIEBERTHAL AND EUGENE P. LIEBERTHAL (*Archives of Dermatology and Syphilology*, March, 1934) have noted the frequency of flat-foot among persons suffering from mycotic infection of the feet. Of 195 patients comprising their series over a period of two and a half years, 90% had flat feet and 30% had hyperidrosis. This high incidence of flat-foot suggested that the resistance of mycotic infections of the feet to treatment might be due in some measure to the local tissue changes resulting from the deformity. The first change that occurs in flat-foot is relaxation and depression of the bony structures of the foot. Undue pressure is thus exerted on muscles, tendons, nerves, blood vessels and lymphatic vessels. The result is reduction in the efficiency of the circulation in the part. "It would be logical to assume that, as a result of these changes, the resistance of the skin itself is lowered, and the soil thus prepared for the invasion and subsequent growth of the fungi". The authors suggest also that the incorrect distribution of body weight in flat-foot may subject the skin lesions to greater trauma than would otherwise occur. Fifteen of the authors' patients who were responding slowly or not at all to the usual therapeutic measures were subjected to orthopædic treatment for flat-foot; they then responded to treatment for their mycotic infection more rapidly. In addition, the hyperidrosis was influenced, and in three cases disappeared completely. The authors conclude that orthopædic corrective measures are an important adjunct to the usual treatment for fungous infections of the feet.

Urticaria.

J. G. HOPKINS AND B. M. KESTEN (*Archives of Dermatology and Syphilology*, March, 1934) discuss the ætiology of urticaria. It is known that an urticarial wheal can be produced in the skin of a normal person by the injection of any one of innumerable substances, and also by local, mechanical, thermal or electrical injury. It is also known that the intradermal injection of substances to which he is sensitized produces a local wheal in a person subject to serum sickness, hay fever, asthma or eczema. The serum of allergic patients will often locally sensitize the skin of normal persons to various allergens. Considerable knowledge has been gained of the pathogenesis of wheals; but not so much is known concerning the cause of the general eruption of wheals known as urticaria. The difficulty is increased by the fact that the same cause may produce erythema, urticaria, vesicular eruption, and angioneurotic œdema at different times in the one patient. In other cases the same excitant may cause both urticaria and asthma. The authors remark that the object of their report is "to separate from the mass of hypotheses that have been advanced the factors that have been demonstrated with reasonable certainty to cause urticaria". As a result of their experience in 300 cases they group the causes as follows. Acute localized urticaria may be caused by: (i) poisons of insects, jelly-fish, and plants; (ii) non-toxic substances to which the skin is sensitized; (iii) heat, cold and mechanical irritation. They mention that most agents producing generalized urticaria may also at times cause localized eruptions. Acute generalized urticaria may be caused by: (i) serum sickness and anaphylactic shock; (ii) food (probably the most common cause); (iii) other foreign substances absorbed through the conjunctiva or respiratory tract; (iv) drugs; (v) heat (including exertion, excitement and other factors that raise the body temperature); (vi) infections; (vii) menstruation. The causes of chronic urticaria are: (i) food (rarely); (ii) focal infection; (iii) animal parasites. The authors remark that many of their cases could not be ascribed to one of these causes with certainty; they suggest that this may be due to difficulties of diagnosis or the existence of multiple ætiological factors. They suggest, however, that "some cases of urticaria must have other causes which may have long been suspected but which still await proof".

Tuberculosis of the Skin.

JOHN E. RAUSCHKOLB (*Archives of Dermatology and Syphilology*, March, 1934) discusses tuberculosis of the skin as it was seen in the practice of the Cleveland City Hospital during the decade ending 1932. During this period 115,649 patients were admitted to the hospital, 6,399 being recognized as suffering from tuberculosis in some form. Of these, only 68 were recognized as suffering from tuberculosis of skin or mucous membrane or both. The author remarks that this low incidence may be due in part to the failure of physicians and others to consult a dermatologist concerning skin lesions in patients suffering from tuberculosis of other parts. The author groups the cases according to Lewandowsky's method of classification. The cases were divided first into two groups: localized lesions due to primary contact, or secondary infection from a focus elsewhere in the body, and more or less generalized lesions produced by blood-borne infection. In the so-called localized group there were 34 cases: *verruca necrogenica* (1), *lupus vulgaris* (6), *tuberculosis verrucosa cutis* (5), *tuberculosis colliquativa* (5), ulcerative tuberculosis of the skin and mucous membranes (17). The patient with *verruca necrogenica* was a medical practitioner who had cut his finger while performing a *post mortem* examination of a patient who had died of tuberculosis. The author remarks on the interest of the fact that though there were 599 patients with glandular tuberculosis, only four of them had *tuberculosis colliquativa*. Of the 17 patients with ulcerative tuberculosis of the skin or mucous membrane, in eleven the lesion was on the tongue (in seven involving the adjacent mucous membrane, and in one the upper lip also); in two the tonsil and adjacent structures were affected; in one the lower lip and buccal mucosa; in one the soft and hard palates; in one the angle of the mouth and adjacent skin of the face; in one there was an extensive ulceration of the rectum extending forward to the tissues of the left buttock. Involvement of the mucous membrane was secondary to pulmonary tuberculosis in each instance. All but three of the lesions in this group of so-called localized disease involved the face, neck, head or upper extremities. There were 34 cases in the group of hæmatogenous lesions. Of these eleven were *lichen scrofulosorum*; seventeen were papulo-necrotic tuberculides; two were *erythema induratum*; one was a sarcoid of the Darier-Roussy type; two were the so-called multiple sarcoid-like granulomata of the skin, described by Klauder and Weidman; one was tuberculosis of the subcutaneous tissue, described by Wende. Fifty *per centum* of the patients with *lichen scrofulosorum* and twenty-five *per centum* of the patients with papulo-necrotic tuberculide had phlyctenular conjunctivitis. The intradermal injection of tuberculin was employed as a diagnostic test in 44 cases. The lowest dilution employed was 1 in 1,000,000; the strength was gradually increased if necessary until a dilution of 1 in 100 was employed. The author remarks that in two of the earlier cases (papulo-necrotic tuberculide in children) an intradermal injection of tuberculin in a 1 in 1,000 dilution was attended by a severe febrile reaction, ulceration at the site of the injection and, finally, generalized exfoliating dermatitis. Of the 44 patients tested, 31 reacted. Other measures employed in diagnosis were biopsy, the Wassermann test, X ray examination of the chest, and sputum examination. There were 45 males and 23 females in the series. The only lesion that seemed to have a much higher incidence in one sex than the other was the ulcerative type, which attacked males and females in the proportions of 7·5 and 1·0 respectively. Death from pulmonary tuberculosis occurred in 25% of the cases. The highest mortality rate (66%) was in the group with ulcerative tuberculosis of the mucous membrane. Half the patients were discharged as healed or improved. Various therapeutic measures were employed. "No particular form of therapy was felt to be of unusual or specific value outside of the procedure described as curettage and impregna-

tion with powdered potassium permanganate." Four patients with *lupus vulgaris* and four with *tuberculosis verrucosa cutis* were treated by this method; five of these eight patients were discharged as improved and three as healed. The author remarks that a general anæsthetic was required in this treatment; the lesions healed slowly and with some pain; the potassium permanganate caused no symptoms of toxicity; the final cosmetic result was excellent. The only other patient discharged as healed was the patient who was treated for *verruca necrogenica* by excision and the application of X rays.

UROLOGY.

Seminal Vesiculitis and Epididymitis.

I. M. PORUDOMINSKI AND G. L. SALUTZKI (*Zeitschrift für Urologie*, November, 1933) consider that gonococcal epididymitis is usually accompanied by infection of the seminal vesicle on the same side of the body and that, as a rule, the infection of the vesicle is primary, that of the epididymis secondary. Further, the course of the infection of the epididymis depends on the degree of infection of the seminal vesicle. Treatment of the epididymis should be accompanied by energetic treatment of the vesicle, if palpable signs of disease of the latter exist. After disappearance of any epididymitis, the secretions of the prostate and of each seminal vesicle should be examined separately and any focus of infection in these organs should be eradicated.

Renal Gumma.

J. LECHNER (*Zeitschrift für Urologie*, November, 1933) has had the unique experience of visualizing by retrograde pyelography a breaking-down gumma of the kidney which had perforated from the renal parenchyma into the renal pelvis. Further radiographic illustration of healing under the action of antisyphilitic treatment was obtained. Healing was established, as determined by pyelography, in about three weeks after the institution of treatment. The author considers that certain cases which have been diagnosed as renal tumour and not confirmed as such may have been gummata.

Renal Calculus.

F. MÖHL (*Zeitschrift für Urologie*, September, 1933) has come to the following conclusions in regard to post-traumatic renal stone formation: (i) Injury to the spinal cord is not of primary ætiological significance; it does not lead to a primarily traumatic nephritis nor does it disturb the function of the kidney in such wise that there is a definite connexion with stone formation; the underlying, but not necessarily actual, influence lies in paresis of the conducting apparatus, the ureter and bladder, with the possibility of ascending infection through paresis of the ureter and infection introduced through the necessity for catheterization in paresis of the bladder. (ii) No certain basis can be found for the assumption that calcium mobilization after severe fractures is a causal factor. (iii) In some traumatic cases, where unilateral renal calculus formation occurs, it is probable that a direct injury to the kidney has accompanied the injury to the vertebral column; such renal injuries are far from uncommon in trauma affecting the trunk. (iv) The commonest cause of all is ascending infection. It is recommended that in future the nucleus of every renal calculus should be carefully examined for the presence of bacteria in order to establish direct proof of inflammatory genesis.

Renal Calculi.

H. MARION (*Journal d'Urologie*, September, 1933) draws attention to an entirely new method of localizing renal calculi with the kidney delivered on the loin. Small calculi or broken-off fragments of calculi are so frequently left behind at operation and are the cause of unsatisfactory results in so many cases, that any technical improvement in operative localization is very welcome. A radioscopic apparatus for this purpose is described by the author, who considers that it will probably become a routine procedure in the future in operations for renal calculi.

Urethrography.

N. HORTOLOMEI AND T. KATZ-GALATZI (*Journal d'Urologie*, November, 1933) say that urethrography is not only a complement of other methods of exploration, but sometimes it alone is capable of clearing up doubt in difficult cases of strictures, fistula malformations and pseudo-diverticular cavities of the urethra and its adnexa. In urethral strictures, when instrumental exploration is difficult, urethrography gives a bird's-eye view over the whole urethra, its adnexa, and the bladder neck. In such cases it indicates the proper methods of surgical intervention and controls operative results. Frequently urethrography makes evident quite unsuspected lesions. It explains the pathogenesis of oil and fat emboli, of general infections, and of general intoxications following the injection of oily or toxic solutions or the penetration of infected urine; this has been made clear by the obvious demonstration of urethro-venous reflux of opaque liquids. For this reason lipiodol is discountenanced by the authors, who prefer "Thorotrast" or "Abrodil", which are non-toxic if by chance they enter the circulation.

Calculus of the Upper Part of the Urinary Tract.

G. L. HUNNER (*Urologic and Cutaneous Review*, November, 1933) discusses calculus formation in the upper part of the urinary tract, with particular reference to recurrent calculus. Stone formation is attributed chiefly to four causes: (i) urostases, particularly that form as a result of ureteric stricture; (ii) urinary infection with urea-splitting organisms; (iii) dietary deficiency of fat-soluble vitamins; (iv) focal infections. To avoid recurrence the author insists that free ureteric drainage is essential. For twenty-four hours after operation the foot of the bed is raised 45 centimetres (eighteen inches) to encourage the correct anatomical reposition of the kidney. It is the author's custom to establish free drainage before operation by cystoscopic catheterization and dilatation of both ureters. Failing this, retrograde dilatation is undertaken at operation. In addition, he usually sutures two Dakin's tubes into the nephrotomy or pyelotomy wound to remain for four to six days. These tubes should not enter the upper one-third of the kidney, as they would then prevent correct reposition. When symptoms are confined to the non-stone-bearing side, Hunner suspects bilateral stricture with symptomless stone formation on one side and urostasis only on the painful side. In the case of bilateral stone, when the preliminary examination shows one kidney to be almost functionless, it is well to drain both sides over a period of about a month. Frequently a greater improvement occurs in the kidney which was originally the more defective; but if it fails to improve in that time nephrectomy may be undertaken unless circumstances demand the conservation of all renal tissue.

Lateral Pyelography.

LATERAL pyelography as a further aid to urological diagnosis is discussed by H. O. Mertz and H. G. Hamer (*Journal of Urology*, January, 1934). The technique is the same as that used in the dorsal decubitus, the side to be X rayed being nearest the film. From this study the authors make deductions regarding: (i) the vertical position of the kidney; (ii) rotation of the kidney and its degree; (iii) antero-posterior displacement; (iv) the outline of the pelvis; (v) the course of the upper part of the ureter. The normally placed pelvis lies behind the second and third lumbar vertebræ, and its long axis corresponds to that of the spine. If the calyces are visualized individually, there is some degree of horizontal rotation which, in otherwise normal kidneys, is regarded as a variation of the normal. Vertical rotation is identified when the long axis of the pelvic shadow is more or less at right angles with the long axis of the vertebral shadow; the cephalic pole of the kidney is directed posteriorly. This is always pathological. Any appreciable degree of anterior displacement is abnormal. The procedure is advocated for the differential diagnosis of abdominal tumours, duplication of the ureters, horseshoe kidney, and pelvic dystopia of the kidney, and in the differentiation between disease of the kidney, gall-bladder disease, and calcified glands.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Victorian Eye and Ear Hospital on October 18, 1933. The meeting took the form of a series of clinical demonstrations.

Hoarseness.

DR. M. E. LYNCH emphasized the frequency of tonsillar or sinus infection in the ætiology of chronic laryngitis and in recurrent attacks of acute laryngitis. Vocal rest was still the primary consideration in the treatment of tuberculous laryngitis; it should be prolonged for many months.

Of the neoplastic diseases, multiple papillomata were best treated by plucking off the growths with blunt forceps through the laryngoscope. This might have to be done on a number of occasions; but the growths would eventually cease to reappear and the final condition of the larynx would be excellent. He wished to emphasize the frequency of malignant disease of the larynx and the extreme importance of early diagnosis. Any person of cancer age suffering from hoarseness of more than three weeks' duration should be submitted to a laryngeal examination. Laryngeal cancer usually had its origin about the centre of a vocal cord. If early treatment was instituted the outlook was hopeful. Treatment should be either by laryngo-fissure and removal of the cord or by fenestration of the thyreoid cartilage and radium implantation. If the growth had extended, but was still limited to the larynx, laryngectomy might give a prospect of cure; but the prognosis was poor and the functional result not to be compared with that of the simpler surgical procedures.

Typical cases of tuberculous, syphilitic and simple laryngitis were demonstrated. A case was shown to demonstrate the excellent functional result following fenestration and radium implantation for an early epithelioma of a vocal cord.

Earache.

DR. G. A. D. MCARTHUR spoke briefly on aural pain, referring first to the conditions which gave rise to a reflex pain in the ear and then dealing with the various acute inflammatory affections of the external and middle ear.

Nasal Obstruction.

DR. H. N. M. PUCKLE discussed nasal obstruction, with special reference to septal abnormalities. After dealing with obstruction arising from the different forms of rhinitis, which caused turgescence and finally hypertrophy and hyperplasia of the nasal mucosa and turbinal bodies, he briefly reviewed the various forms of neoplasm, which were sometimes met with in the nose. He remarked that benign neoplasms were rarely met with. Malignant ones usually arose from the ethmoidal labyrinth or superior maxilla.

Septal deformities might be developmental or traumatic. Traumatic deformities were usually confined to the cartilaginous septum; developmental deformities usually involved the bony septum as well. The speaker discussed the various types of deviations and spurs and their treatment. Particular stress was laid on the need for treating those high deviations which pressed on the middle turbinate and prevented proper aeration and drainage of the paranasal sinuses.

Nasal Catarrh.

DR. JEAN LITTLEJOHN briefly described the pathology of the various types of infectious catarrh and the measures taken to prevent and treat them. Particular reference was made to atrophic rhinitis, the theories of its causation, and the methods to adopt in its treatment. She mentioned the dire results that sometimes occurred in too drastic removal of nasal mucous membrane in operations on the nasal cavity. In such cases the patient might return at a later date with a severe type of atrophic rhinitis. Dr. Littlejohn also discussed nasal catarrh secondary to sinus infection, and she pointed out how useless it was to treat the actual catarrh without first making a thorough examination of the naso-pharynx and accessory sinuses and eliminating the primary cause of the trouble. In many cases with persistent nasal catarrh there was involvement of one or more of the accessory sinuses of the nose.

Patients suffering from the various types of nasal catarrh were shown.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been elected members of the New South Wales Branch of the British Medical Association:

Barry, John Patrick, M.B., B.S., 1930 (Univ. Sydney), 6, Church Street, Randwick.
Kelleher, Frederick, M.B., B.S., 1930 (Univ. Sydney), Forbes.
Rose, Thomas Frederick, M.B., B.S., 1933 (Univ. Sydney), Saint Vincent's Hospital, Darlinghurst.
Sheehan, Paul Alexander, M.B., B.S., 1933 (Univ. Sydney), Saint Vincent's Hospital, Darlinghurst.
Sillar, Donald Boyd, M.B., B.S., 1929 (Univ. Sydney), Alexander Street, Kurri Kurri.
Wyndham, Norman Richard, M.B., B.S., 1931 (Univ. Sydney), 27, Oxford Road, Strathfield.

Medical Societies.

THE VICTORIAN MEDICAL BENEVOLENT ASSOCIATION.

THE sixty-eighth report of the Committee of Management of the Victorian Medical Benevolent Association for the year ended December 31, 1933, has come to hand.

The President of the Association is Dr. R. H. Fetherston; the Vice-Presidents are Dr. G. T. Howard and Dr. J. P. Major; the Honorary Secretary is Dr. E. L. Gault, and the Honorary Treasurer is Dr. L. Mitchell.

In publishing the annual report and balance sheet we would draw attention to the excellent result of the appeal made by the Committee to medical practitioners to become members by paying five shillings; this sum was, by arrangement with the Council of the Victorian Branch of the British Medical Association, added to the Branch subscription.

The report and balance sheet are as follows.

As this is the first occasion for many years when the Committee of the Victorian Medical Benevolent Association has had an opportunity to address a large body of subscribers, it seems fitting to indulge in retrospect.

The project of forming a medical benevolent association was conceived by the late Dr. Cutts, who communicated with many members of the profession, and at length convened by advertisement an inaugural meeting, which was held in the board room of the Melbourne Hospital on Monday, March 20, 1865. The following gentlemen were present: Professor Halford, Dr. Motherwell, Dr. Brownless, Dr. Cutts, Dr. Black, Dr. Martin, Dr. Fetherston, Dr. Neild, Dr. McCrea, Dr. Barker, Dr. Wilkie, Dr. Jonasson, Dr. Thomas, Dr. Graham and Dr. Mackenzie, and Mr. Dermott, Mr. Phillips, Mr. Pugh, Mr. Knaggs, Mr. James, Mr. Embling, senior, Mr. Embling, junior, Mr. Fisher, Mr. Giller, Mr. Fitzgerald, Mr. Rudall and Mr. Blair. Note the strict adherence to etiquette in the titles of these medical gentlemen. Mr. Knaggs was elected chairman, and the business transacted was the adoption of nine simple rules, which had been formulated by Dr. Cutts, Dr. Martin and Dr. Neild, and the election of the following members of Committee: President, Dr. Howitt; Vice-

Presidents, Dr. McCrea and Mr. Knaggs; Treasurer, Dr. Cutts; Honorary Secretary, Dr. Neild; Ordinary Members of Committee, Professor Halford, Dr. Tracy, Dr. Martin and Mr. Giller.

It was announced that subscriptions of £1 1s. had been received from Dr. Wilkie, Dr. Martin, Dr. Jonasson, Dr. Graham, Dr. Wigg, Mr. Jopling, Mr. Dearsley, Mr. Dermott, and Mr. Ewing.

In this quiet way the Association, in whose interests we are met today, had its birth and got to work at once, dispensing assistance and relief to needy members of the medical profession and their dependants.

A year or so later a list of subscribers and donors to the Association, numbering 95, was published with the first annual report. Particulars were given of fifteen cases relieved by the expenditure of £67, and a beginning was made of the formation of a capital fund from a balance of subscriptions of £3 and donations of £42.

From the first great care was taken in investigating the credentials of the numerous applicants for relief. The lure of gold brought to Australia many reckless medical adventurers, who later became derelicts, drifting from State to State, and town to town, nearly all of them heavily weighted by addiction to alcohol, who applied again and again for succour before they were finally engulfed in oblivion. The early records are filled with the sad and often sordid stories of these incapables and the efforts, not always without result, to rescue them.

From the outset a major aim of the Association has been to build up a strong permanent fund, from the income of which relief might be given to necessitous widows of medical men and for the education of their orphaned children. As the subscriptions of members were considerably in excess of the current requirements for casual relief, this fund steadily grew from year to year and was augmented by donations, notably by that of the executors of the late Mr. Aubrey Bowen, in 1895, of £500.

In the revised rules, issued in 1879, this object is expressly stated. Rule XIV reads as follows: "The interest only of the Permanent Fund shall be devoted solely to the relief of widows and orphans, or other near relations of medical men, who have subscribed continuously during the three years immediately preceding their death."

Thus, carefully guarded, the Permanent Fund had reached the sum of £2,936 in the year 1892, over £2,000 of which was on fixed deposit in the Australian Deposit and Mortgage Bank. This bank underwent reconstruction owing to the collapse of the land boom, and the Association accepted, in lieu of its deposit, preference shares to a corresponding value, and these appear in the assets for many years. Since 1892 the Permanent Fund has been invested in government securities only, and by yearly increment stands now at £8,124 13s. 8d., as shown by the balance sheet.

The following gentlemen have held the position of President of the Association: Dr. Howitt, 1865-1873; Mr. Knaggs, 1874-1878; Mr. Giller, 1879-1884; Dr. Cutts, 1885-1897; Dr. Gresswell, 1898-1904; Dr. J. P. Ryan, 1905-1918; Dr. W. Moore, 1919-1924; Dr. J. Talbot Brett, 1925-1928; Sir G. W. Syme, 1929; Sir G. Cuscaden, 1929-1932; Dr. R. H. Fetherston, 1933-1934.

Two names should receive distinguished mention, that of Dr. Cutts, founder of the Association and its honorary treasurer from 1865 till 1897; and that of Dr. Neild, who was honorary secretary from 1865 till 1898. As we contemplate the structure they were so largely responsible for rearing, the old quip aptly comes to mind: *Si monumentum requiris, circumspice.*

In spite of repeated appeals for support, the list of subscribers gradually dwindled, till in 1902 it comprised only those who were members of the Committee, and this unsatisfactory state of affairs has continued till this year.

Last year the Council of the British Medical Association was asked to circularize its members in the interests of the Victorian Medical Benevolent Association, and to request them, if they so desired, to become members of the Victorian Medical Benevolent Association by paying five shillings, the reduced fee for membership, along with their annual subscription to the British Medical Association. A most gratifying response has been made to this request, resulting in the addition already of some 350 to our membership. The Committee of the Victorian Medical Benevolent Association expresses its deep debt of gratitude to the Council of the British Medical Association for the part they have taken in bringing about this notable result, and feel assured that a new era of usefulness has opened for the Association.

EDWARD L. GAULT,
Honorary Secretary.

VICTORIAN MEDICAL BENEVOLENT ASSOCIATION.

Revenue and Expenditure Account, Year ended December 31, 1933.

REVENUE.	£	s.	d.
To Interest on Australian Consolidated Loans	284	14	6
„ Interest on Fixed Deposit	13	1	0
„ Interest on State Savings Bank Account	1	12	9
„ Subscriptions	1	10	0
	£300	18	3

EXPENDITURE.	£	s.	d.
By Gratuities	88	18	0
„ Extra Stamp Duty	0	0	1
„ Accountancy Fee	2	2	0
„ Surplus for year	209	18	2
	£300	18	3

Balance Sheet as at December 31, 1933.

	£	s.	d.
Accumulated Funds to December 31, 1933	7,914	15	6
Surplus for Year as per Revenue Account	209	18	2
	£8,124	13	8

	£	s.	d.
Australian Consolidated Treasury Bonds	1,560	0	0
Australian Consolidated Inscribed Stock	5,080	0	0
Melbourne Metropolitan Board of Works Inscribed Stock	100	0	0
Victorian Government 3% Stock	500	0	0
Fixed Deposit—Commercial Bank	407	15	9
Loan, Mrs. Carstairs	30	0	0
Current Account, Commercial Bank of Australia £383 3 8			
State Savings Bank £3 12 8			
	446	16	4
Cash in hand	0	1	7
	£8,124	13	8

THE MELBOURNE PÆDIATRIC SOCIETY.

A MEETING OF THE MELBOURNE PÆDIATRIC SOCIETY was held at the Children's Hospital, Melbourne, on November 22, 1933. The meeting took the form of a series of clinical demonstrations.

Congenital Deformities.

DR. DOUGLAS STEPHENS showed four infants, under the age of three months, suffering from cleft lip and cleft palate. The types of the disorder shown were: single incomplete, single complete, double complete symmetrical with projecting premaxilla, and double asymmetrical. Five other patients were shown after operation had been performed for cleft lip and cleft palate. All patients with lip deformities were operated on before the age of four months, and those with cleft palate were operated on before the age of two and a half years.

Three patients with *spina bifida* were shown. One, who had not been operated on, a female, aged five weeks, had a large leaking meningo-myelocele, slight hydrocephalus, paralysed legs, and patulous anus. Another, a female, aged nine years, had been operated on at the age of four weeks. This girl was quite intelligent, but suffered from poor urinary control and had recurring trophic ulcers on the right foot; a ramisectomy for this was considered advisable. The other child was a male, aged two years, who had been operated upon at the age of three months. Some recurrence of the protrusion had occurred; but the covering was very hard, due probably to the inclusion of cartilage at the time of operation. The legs were large and rather weak, but urinary control was fairly good.

Dr. Stephens next showed a boy, aged eighteen months, who had complete epispadias, but no sign of extroversion of the bladder. A finger could readily be introduced into his bladder; but in spite of this fact he was developing some degree of urinary control lately. Owing to a severe degree of cystitis no operation had yet been undertaken.

Dr. Stephens's next patient was a baby girl, aged fourteen months, who had been operated on four months previously for imperforate anus and recto-vaginal fistula. The operative result was satisfactory and the infant had sphincteric control. Dr. Stephens thought the sphincter was associated with the transplanted lower end of the rectum and was not present in the perineal tissues.

Dr. Stephens also showed two infants with extensive facial nævi. One had been treated with injection of a 57% solution of sodium morrhuate and subsequent coagulation diathermy, and the other, aged three and a half months, with an application of coagulation diathermy alone. The first patient had done well and the result was satisfactory from a cosmetic point of view. In the second patient the growth was rapidly increasing.

Dr. Stephens's next patient was a boy, aged nine years, who had had a large, somewhat pyramidal tumour about the right auricular and parotid region since the age of two months; it was steadily increasing. The ear projected from the lateral aspect of the skull on the apex of the truncated cone-like mass. It felt as if cartilaginous elements were present, and a diagnosis of mixed parotid tumour was made, although the possibility of its being a teratoma was considered. (Since the meeting the growth has been operated upon and the tumour described as a neurofibromatous growth of active character and likely to recur; there were no teratomatous elements in it, and nothing suggestive of the hygromatous type.)

Dr. Stephens's last patient was a boy, aged fourteen months, who had multiple deformities, including malformed left ear, hare lip, scoliosis, talipes, undescended testicle and transposition of viscera. The hare lip, talipes and scoliosis had been treated, and the child was thriving and apparently healthy.

DR. CHARLES H. OSBORN showed three patients who had been treated by the modified Mirault operation for hare lip.

Dr. Osborn also showed four children with *pes cavus*, on whom Steindler's operation had been performed.

Dr. Osborn's next patient was a boy, aged ten years, who had had gross deformities due to neglected club foot. A method of correction by manipulation, sectioned plaster and turn-buckle was being employed.

Dr. Osborn also showed a girl, aged two years, with congenital dislocation of the hips. A simple apparatus was demonstrated for use in the determination of the degree of anteversion. Dr. Osborn remarked that exaggerated anteversion was encountered in many of these cases.

Dr. Osborn also showed a cinematograph film illustrating the result of open operation for congenital dislocation of the hip in a girl aged thirteen years. Wire traction had been employed, then reduction and reformation of the upper lip of the acetabulum.

Dr. Osborn's next patient was a child, aged one year, who had been treated by Kondoleon's operation for congenital diffuse hypertrophy of the subcutaneous tissues of the arm.

Adeno-Carcinoma.

Dr. Osborn also showed a girl, aged ten years, who had been operated on for adeno-carcinoma of the sigmoid colon. Resection of the sigmoid colon, followed by a gun-barrel colostomy, had been performed.

Post-Traumatic Cerebral Contusion.

DR. J. W. GRIEVE showed a boy, aged nine years, who had been admitted to the Children's Hospital on October 19, 1933, with a history of persistent headache for six weeks, following a fall from a horse. The initial injury was probably associated with loss of consciousness and was followed by severe frontal headache. The boy also complained of dizziness and lack of concentration. The headache was affected by posture. For three days prior to admission he had suffered from vomiting, irritability, drowsiness and photophobia, and it was thought by the medical practitioner who had referred him to hospital that he might be suffering from cerebral tumour or tuberculous meningitis. At the time of admission the boy was drowsy and had a dirty tongue; but there were no definite neurological findings. His cerebro-spinal fluid was under increased pressure, contained 30 lymphocytes per cubic millimetre, but was otherwise normal. The cerebro-spinal fluid was again examined on October 28, 1933, and on this occasion contained 20 lymphocytes. His blood and cerebro-spinal fluid failed to react to the Wassermann test, and X ray examination of his skull revealed no fracture. He was given an enema consisting of 180 cubic centimetres of a 25% solution of magnesium sulphate each morning. The enema was retained for half an hour. Much benefit was obtained from this; but after several days the patient was unable to retain the enema for more than a few minutes, and his headache returned. On November 5 an intravenous injection of ten cubic centimetres of hypertonic saline solution (30%) was given with great benefit. From then on there was no recurrence of headache, and at the time of the meeting the patient had been up and about for ten days.

Splenomedullary Leuchæmia.

Dr. Grieve's second patient was a boy, aged thirteen years, who had been admitted to the Children's Hospital on July 31, 1933, with a grossly enlarged spleen. At the time of admission the leucocytes numbered 300,000 and the erythrocytes 2,800,000 per cubic millimetre. The blood film was typical of splenomedullary leuchæmia. The patient was referred to the Melbourne Hospital for deep X ray therapy, and received treatment from August 16 to September 16, 1933.

On August 11 the leucocytes numbered 300,000, on August 31, 139,000, and on October 27, 9,600 per cubic millimetre. The spleen, which on admission was palpable in the left iliac fossa and extending into the right iliac fossa, was now just below the costal margin.

Dr. Grieve said that he showed this patient to illustrate the dramatic temporary effect of deep X ray therapy in this condition in childhood.

Progressive Muscular Atrophy.

Dr. Grieve also showed a boy, aged thirteen years, with a neuritic form of progressive muscular atrophy (Charcot-Marie Tooth type). At the age of six years this boy developed difficulty in walking, apparently owing to inability to flex and evert his ankle. The weakness gradually increased in the lower limbs, especially in the muscles of the feet and legs, and this weakness was accompanied by wasting. Two months before admission to hospital it was observed that wasting had commenced in the hand muscles and that the patient was developing some weakness of the intrinsic muscles of the hands. There was no family history of the disease.

Examination confirmed the wasting of the intrinsic muscles of the hands and also the weakness of these muscles. The interossei and the lumbrical muscles did not respond to faradism and galvanism; there was a sluggish response in the muscles below the elbow. In the lower limbs there was some general wasting of muscles, especially below the knee, and the patient was unable to evert or dorsiflex his ankle. Inversion was poor. Voluntary flexion and extension of his toes was very poor and extension of his ankle was weak. There was no response to faradism in the muscles or nerves below the knee, nor to galvanism in the muscles below the knee. His deep reflexes were present, knee jerks being more active than the ankle jerks. The plantar reflex was flexor in type. No fibrillary tremors were detected.

There were no other positive neurological findings; no sensory loss or posterior column involvement was detected.

Friedreich's Ataxia.

Dr. Grieve's fourth patient was a boy, aged fourteen years, who first had symptoms at the age of six years; in the early stages he had been thought by his own medical attendant to be suffering from chorea. He presented the typical features of an advanced Friedreich's ataxia.

Exophthalmic Goitre.

Dr. Grieve also showed a girl, aged nine years, who had been admitted to the Children's Hospital on October 30, 1933, with a history of exophthalmos for four months, nervousness manifested by irritability and emotional instability and tachycardia. She had lost some weight and became excessively fatigued on hot days. No tremors had been observed. While attending the out-patients' department prior to admission the child had been subject to recurrent colds and coughs. There were slight enlargement of tonsils and adenoids, and some mucosal thickening in the left maxillary antrum. However, in the past two years she had had very little naso-pharyngeal infection.

Examination revealed a thin child, under the normal weight for her age and height; there were definite exophthalmos and some thyreoid enlargement. The pulse rate was 80 to 100 per minute. The blood pressure was normal. No tremors were observed. Her basal metabolic rate was normal.

Treatment consisted in the administration of Lugol's solution in a dose of three drops a day.

Dr. Grieve's next patient was a boy, aged eleven years, who had been admitted with the same syndrome as the last patient, twelve months before. He had glycosuria and his fasting blood sugar content was 0·15%. He was looked on as a true diabetic. His diet was stabilized and he was receiving insulin and was progressing satisfactorily. His thyreoid gland decreased in size. His exophthalmos almost disappeared, and his nervous symptoms subsided. His progress and weight were satisfactory. His basal metabolic rate was normal. During the early stages he received ten minims of Lugol's solution three times a day for two weeks, and since then three to five minims a day.

The third patient suffering from exophthalmic goitre was a girl who had been shown previously, at a meeting in 1930, by Dr. Grieve. Her age when admitted in 1930 was thirteen years, and she presented the typical syndrome of exophthalmic goitre. Her condition was complicated at that time by the presence of a definite chorea. Her basal metabolic rate was normal, and she responded well to the administration of Lugol's solution, which, after two weeks, was reduced to three to five minims a day. Her condition improved, and at the time of presentation in 1933 she showed no symptoms of hyperthyreoidism or dysthyreoidism.

Dr. Grieve said that he showed these three patients to illustrate the prominence of the dysthyreoid and the comparative absence of the hyperthyreoid symptoms in exophthalmic goitre in childhood. The complete recovery of one of the patients after observation for two years was instructive.

Pulmonary Complications of Operations on the Mouth, Nose and Throat.

DR. D. M. EMBELTON discussed a series of histories of patients who had suffered from pulmonary disorders after operations on the mouth, nose or throat, under general anæsthesia.

The first patient was a girl, aged eleven years, who had had a general anæsthetic for teeth extraction on November 12, 1933, and had suffered afterwards from languor and anorexia, but no cough. On November 14 she had a pain in the right axilla. On November 17 the temperature rose to 38·3° C. (101° F.), and signs of a lesion were detected at the base of the right lung. The patient was discharged from hospital on November 20, 1933. Dr. Embelton remarked that this was a case of insufflation with obstruction of a small bronchus, collapse of a portion of the lung, and gradual absorption of the exudate.

Dr. Embelton's next patient had been operated on for resection of the nasal septum on December 20, 1927, and had developed symptoms of a pulmonary disorder three days later. On January 17, 1928, X ray examination revealed an area of consolidation in the lower lobe of the right lung. On June 6, 1928, no abnormality was detected. Dr. Embelton remarked that this case exemplified the slow absorption but ultimate spontaneous cure in pulmonary consolidation due to insufflation.

Dr. Embelton's next patient was a woman, aged thirty-five years, who had had teeth extracted under general anæsthesia on October 17, 1929, after which she had suffered from a persistent cough, a dirty tongue, an unpleasant taste, and offensive breath. For a fortnight prior to the time when Dr. Embelton first saw her (November 29, 1929), she had suffered from moderate fever, and on the previous day she had suffered from hæmoptysis. X ray examination revealed a loss of translucency in the upper lobe of the right lung, at the first intercostal space. On December 4, 1929, the patient was still troubled with a cough, and the temperature was still above normal. On December 11, 1929, there was great improvement.

Dr. Embelton remarked that this case exemplified the slow development of the inflammatory process following insufflation, and the spontaneous cure by expectoration. It was not an unusual type of case.

The next patient discussed by Dr. Embelton was a child, aged ten years, who had had tonsillectomy performed under general anæsthesia on February 14, 1931. She was first examined by Dr. Embelton six weeks later, when she had offensive breath, pain in the right axilla and an unpleasant taste in the mouth. X ray examination revealed consolidation of the upper lobe of the right lung. No fluid level was observed. On May 9, 1931, the clinical signs were more pronounced, and there was irregular fever. On July 10, 1931, the abscess ruptured into the pleural cavity, and X ray examination revealed pyopneumothorax and a fluid level. The empyema was treated by closed drainage. After a serious illness the patient made a complete recovery.

Dr. Embelton's last patient was a boy whose tonsils had been removed on August 14, 1928, when he was five years old. In November, 1928, he suffered from cough, expectoration, pain, languor and anorexia. There was no reaction to the Wassermann, Casoni or Von Pirquet test. There was dulness to percussion at the base of the left

lung. On October 28, 1929, a note was made to the effect that the patient was expectorating quantities of pus. Artificial pneumothorax was induced. Later, phrenic avulsion and thoracoplasty were performed. Postural drainage was employed. At the time of the meeting X ray examination after the injection of lipiodol revealed that the abscess was as large as ever. As the boy was in good general health and growing rapidly, Dr. Embelton proposed to rely on postural drainage for the time being.

Anæsthesia.

Dr. Embelton described a simple method of anæsthesia which, he said, was efficient in the absence of modern theatre equipment and efficient mechanical anæsthetic apparatus. It had been employed in about 400 consecutive tonsillectomies. A mild bronchitis had occasionally occurred. There had been no other sequelæ. The method was based on the intranasal-endotracheal method described by J. W. Magill. The method was as follows.

General anæsthesia of moderate depth was induced with ethyl chloride and open ether. A Whitehead's gag was placed in the patient's mouth and opened. Commercial rubber tubing, three-sixteenths to three-eighths of an inch in bore, was introduced into the trachea by intubation through the glottis. This was achieved by the use of a pelvic forceps bent in the shape of an intubation introducer. With this forceps the rubber tube, 27 centimetres (twelve inches) long, was grasped and introduced. A spring fountain pen clip was threaded on the rubber tubing and by this means the tube was anchored to the Whitehead gag. A tube leading from the side of a metal cup was attached to the end of the endotracheal rubber tubing. The open mouth of the cup was covered with gauze clasped about it by a metal spring. Through the rubber tube and the cup the patient inspired and exhaled ether poured upon the gauze. The pharynx behind the fauces was packed with a strip of gauze, 2·5 centimetres (one inch) in width, the tail of the strip remaining outside the mouth. There was no insufflation of blood from the field of operation. Anæsthesia could be prolonged as desired and hæmorrhage completely controlled.

When hæmostasis after tonsillectomy was complete, the packing was removed with the tube *in situ*, but the patient on his side. The pharynx was packed with a swab and the anterior nares held till the bleeding stopped, then any tags were removed and the endotracheal tube taken out.

Intubation of children over twelve or fourteen years of age might be found difficult. In these cases the rubber tubing was impaled on an obturator of suitable size, lubricated well with glycerine, and inserted into the larynx through a Jackson's introducer. One practical point was that for this procedure the initial anæsthesia must be deep and introduction through the glottis attempted only at inspiration when the cords were separated.

DR. A. P. DERHAM, who had helped Dr. Embelton to develop the simplicity of the apparatus and procedure, stated that in over 300 cases he had found the method extremely effective and easy to handle. It compared very favourably with the anæsthetics given with more complicated apparatus.

Asthma.

DR. MONA BLANCH showed nine patients suffering from asthma. Routine treatment had been given and tests for sensitivity had been done by both scratch and intradermal methods. Three pollens (capeweed, cocksfoot and rye grass) and four foods (egg, flour, milk and oatmeal) were used in the scratch tests, and six extracts (duck feathers, hen feathers, horse dander, house dust, kapok and orris root) intradermally. There were six boys and three girls in the series. One boy reacted to cocksfoot (++) and rye grass (+); but in every other case there was no response to the scratch tests. Only one boy failed to react to the intradermal tests; each of the remaining patients reacted to more than one substance. The incidence of susceptibility to duck feathers, horse dander and house dust was particularly high. All patients had been examined physically and when necessary had been referred to an oto-rhino-laryngologist, or had had their sinuses examined by X rays. In each case instructions had been given for adequate rest and absence of excitement; all eiderdown quilts had been forbidden and inquiry had been made concerning pillows, mattresses, dust *et cetera*. The diet suggested was low in fat, with extra carbohydrate added if there were any indications of acidosis, and parents were told that no effort must be made to feed the child up.

Potassium iodide and stramonium were given in every case when there were either cough or chest signs, and tablets of calcium lactate, ground up, in a dose of 0·6 gramme (ten grains) with meals, in others. Ephedrine sulphate in a dose of 0·03 gramme (half a grain), or 0·015 gramme (one-quarter of a grain) to children under the age of three years, was given to abort the paroxysms, and in one bad case was given every night.

Six of the series, who had double or triple positive reactions to the extracts and who were still having frequent and severe paroxysms despite the above-mentioned *régime*, were given a course of injections of the extract to which they were most sensitive. If two or more extracts evoked an equal reaction, the commonest one was chosen, rather than a combination of several, for reasons of economy. Injections were given at intervals of four or five days, of the *A*, *B* and *C* strengths as prepared by the Commonwealth Serum Laboratories in the following series from each in turn: 0·1, 0·2, 0·4, 0·6, 0·9 cubic centimetre. Then 0·1 cubic centimetre of *D* strength was given, followed by 0·2 cubic centimetre of *D* each week for six to eight weeks, then fortnightly.

In one case the course had only just begun; in the remainder there had been a marked lessening in both the frequency and severity of the attacks. In the earliest case, in which the course had ceased five months previously, after only ten injections of *D* strength, more severe attacks, similar to those occurring before the commencement of treatment, were beginning. In view of this the scheme of small doses at fortnightly intervals had been inaugurated. The remaining four patients were all greatly improved, though in each case the attacks still occurred.

DR. R. L. FORSYTH suggested giving calcium acid phosphate instead of calcium lactate, as it was more readily absorbed. He said that calcium lactate in a dose of 3·0 grammes (five grains) dissolved in 0·75 cubic centimetre (twelve and a half minims) of dilute phosphoric acid and sweetened with glycerine, made a palatable mixture which the body appeared to utilize.

MEDICAL WOMEN'S SOCIETY OF NEW SOUTH WALES.

THE ANNUAL GENERAL MEETING OF THE MEDICAL WOMEN'S SOCIETY OF NEW SOUTH WALES was held at the Lecture Hall, Sydney Hospital, Sydney, on Wednesday, March 28, 1934, at 8 p.m.

Annual Report.

The annual report and financial statement for the year 1933 were adopted on the motion of Dr. M. Hamilton, seconded by Dr. J. Saunders. The annual report is as follows.

Membership.—The financial membership stands at 68.

Meetings.—In accordance with the rules of the Society, four quarterly meetings were held during the year. In September the meeting took the form of a clinical evening at the Rachel Forster Hospital, when members of the honorary staff showed a number of interesting cases.

Addresses and Papers.—At the annual general meeting in March, Dr. Lucy Gullett, the retiring President, addressed the meeting upon the work of the Medical Women's Society during the years 1929-1932.

Dr. Constance D'Arcy, the incoming President, gave an account of the pioneer work of medical women in Sydney.

Dr. Theo. England gave an address upon the work of the mental hospitals of New South Wales.

In June, at the quarterly meeting, Dr. Alexa Maclean read a paper entitled: "Antenatal Work in General Practice".

Social Meetings.—The annual dinner of the Society was held on December 6 at the Women's Club, with an attendance of fifty members. Dr. Harriett Biffin, the guest of honour, was presented with a cheque for £68 12s. by the President, Dr. D'Arcy. The amount was subscribed by medical women for the purpose of a donation to the Rachel Forster Hospital in Dr. Biffin's name in recognition of her services to medical women and to the hospital.

Election of Office-Bearers.

President: Dr. C. D'Arcy.
Vice-Presidents: Dr. L. Gullett and Dr. M. Little.
Honorary Secretary: Dr. A. Walker.
Honorary Treasurer: Dr. A. Aitken.
Committee Members: Dr. B. Durie, Dr. I. Sebire, Dr. M. Hamilton, Dr. M. Edelston-Pope, Dr. J. Saunders, Dr. T. Carmichael, Dr. I. Birchall.

An Address.

Dr. Karen Helms read a paper of exceptional interest upon the subject of "Contraception from the Medical Aspect". This address, illustrated by lantern slides, formed a most comprehensive survey of the subject from the scientific and practical points of view.

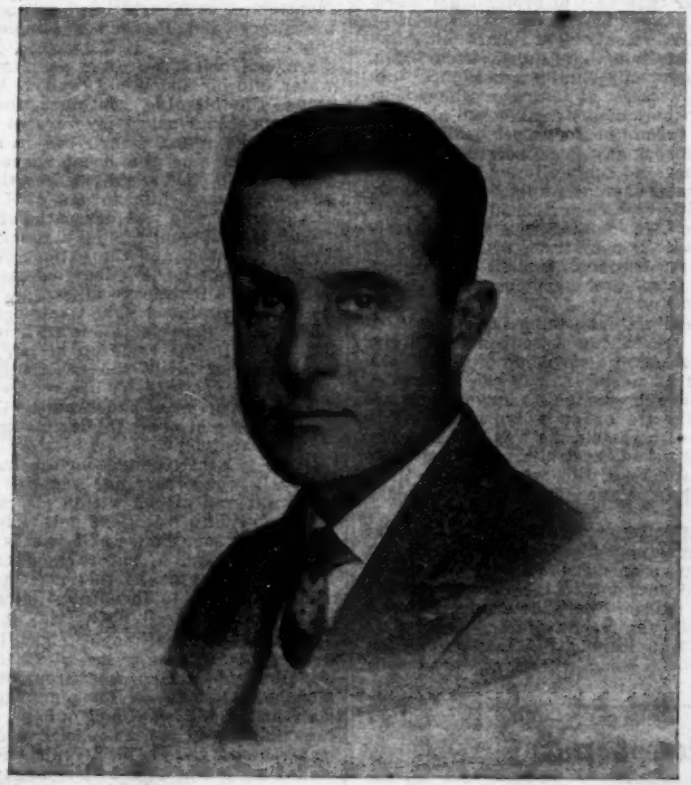
Dr. Sandford Morgan also spoke, endorsing Dr. Helms's view, and read a short paper from Dr. K. Cunningham, who was prevented by illness from attending the meeting.

Dr. Marjorie Little moved a vote of thanks to the speaker, which was seconded by Dr. M. Hamilton.

Obituary.

ROBERT KINGSBURY LEE BROWN.

WE are indebted to Dr. M. S. S. Earlam for the following appreciation of the career of Dr. Robert Kingsbury Lee Brown.



By the untimely death of Robert Kingsbury Lee Brown the medical profession and the public have lost a surgeon whose services could ill be dispensed with and whose work and personality will be greatly missed for years to come, for, despite his comparative youth, he had attained to professional heights to which many men older than he still aspire.

He was educated at the Sydney Grammar School and graduated M.B., Ch.M. at the University of Sydney in 1920. It is perhaps not generally known that during the War he volunteered for active service on three occasions. Owing to the fact that he was a medical student he was not accepted for active service, but was accepted as a member of the Australian Imperial Force and granted leave of absence until he should qualify, receiving the regular Australian Imperial Force discharge at the termination of the war. On one occasion he actually succeeded in getting into camp, but only until the authorities discovered that he was a medical student.

On graduation he went to London, where he worked for twelve months. He then proceeded to San Francisco, having been appointed assistant to Dr. Frank Hinman, Professor of Urology at the University of California, where he remained for three years, gaining experience in practical urology, research and teaching. During the last of these three years he held the positions of Honorary Assistant Urologist to the University of California Hospital and to the City and County Hospital, San Francisco.

His research work was notable. Together with Hinman he published the first account of the phenomenon of pyelovenous backflow, later amplifying this with work carried out with Laidley in Sydney. On his return to Sydney he received the degree of Doctor of Medicine, submitting a thesis on the vascular anatomy of the kidney, based on original work he had carried out. In addition to his individual work he was in two successive years one of a team of three whose research work was awarded the gold medal of the American Medical Association for the best research exhibit for those particular years.

He commenced consultant urological practice in Sydney in 1925, and on the creation of departments of urology at the Royal Prince Alfred Hospital and at the Royal Alexandra Hospital for Children in 1926, was appointed honorary assistant urological surgeon to both hospitals. On the retirement of Robert Gordon Craig in 1930, he succeeded in each instance to the position of honorary urological surgeon. It was almost unprecedented for so young a man to receive such responsible appointments. He fully realized this, but his heavy responsibility proved but the opportunity for him to demonstrate his ability, so that at the time of his death he enjoyed the fullest confidence of all his colleagues.

One often finds it easy to criticize the treatment or the judgement of one's seniors, not necessarily, of course, with justice, but with Lee Brown this was extremely difficult, and his views were invariably sound and conservative. He had a meticulously careful operative technique that was reflected in his results. During his tenure of the senior urological appointment at the Royal Prince Alfred Hospital the mortality following prostatectomy fell from over 20% to the present figure of 4% or 5%. Invariably, however, he counted it a greater achievement to cure a patient by transurethral surgery than to resort to open operation. He had an especial flair for transurethral work and was a born *instrumenteur*. In the treatment of vesical neoplasm especially some of his results bordered on the uncanny.

It was the keenest pleasure to work under him, and by sisters, wardsmen and instrument attendants alike he was held in high regard and equally high affection. His was an unusual personality. He was always either in the brightest of spirits or down in the depths, almost always the former, occasionally the latter. Beyond doing what

work came his way, he did nothing to advance himself professionally, and made no secret of the fact that urology was only one of his many interests, with an indifference to public opinion which amounted to carelessness. His *joie de vivre* was exceptional, but those who worked with him and who were privileged to know him well, knew that he had a very real regard for his patients, which was returned a thousandfold, and a tendency to worry over them to a greater extent than a surgeon is perhaps wise to do. He obtained his reward in a large private practice, though finance, provided that he was able to enjoy life as he wished, was ever a matter of secondary importance.

It is still hard to realize that he is lost to Australian urology, and still harder to estimate the magnitude of the loss.

Dr. J. Kempson Maddox writes:

Lee Brown had a premonition that he would not live to old age. Indeed it would be difficult to have pictured him as an old man. He was the embodiment of the youthful qualities of energy, humour and frankness. In almost every respect other than that of professional knowledge and judgement, he always looked and acted as if he were no more than, say, twenty-eight years old, and enjoying every moment of living. A quick, keen brain, abundant ambition and opportunity brought him unqualified professional success at an age when most consultants are still well short of their cakes and ale. His unfailing generosity, his friendliness and personality were more than sufficient to dispel any grudge or jealousy on the part of such colleagues and competitors. His unusual ability in clinical and experimental urology had already won for him a reputation which extended far beyond Sydney or even this State. He confined himself exclusively to the surgery of the genito-urinary tract, when he set an example of honesty in professional dealing which constantly prevented him from ever stepping beyond the confines of his own specialty.

His constitutionally highly strung temperament, with a consequent quickness of speech and action, may at times have given to the casual observer a suspicion of abruptness, even conceit. Such was by no means the case, however, to those who knew him well enough to understand his trials in an operating theatre or on a crowded putting green. As a golfer, I have been told, he was probably one of the finest "iron" players in Australia. He had close friends in almost every sphere of life, who not only liked him, but loved him, and to whose affection he showed a ready response.

He enjoyed to the full all the thrills of outdoor life: a close finish in a golf championship, a well stocked trout stream, a powerful car on an open road; and it was almost inevitable that he should succumb to the lure of the air. As in other fields, his extraordinary determination and enthusiasm made him, in the hands of Mr. Mollison, a most capable aviator. The loss to his family, friends, patients and colleagues will remain evident for a long time to come.

Correspondence.

LODGE CERTIFICATES.

SIR: The forms issued to us as lodge doctors by the Friendly Societies' Association of New South Wales require us to certify that the patient "is unable to follow any occupation".

I do not know who is responsible for accepting this form of certificate on our behalf, or whether he will have to sign these certificates himself, but I should like to know whether, because a man is unfit to follow his usual occupation, we are wise in certifying that "he is unable to follow any occupation". Personally I avoid it.

Yours, etc.,

A. A. PAIN.

Concord,
New South Wales,
May 7, 1934.

TUBERCULIN.

SIR: I have been reading with some interest and more amusement the patronizing remarks made on the use of tuberculin.

It is an extraordinary fact that in thirty-five years I have not met one surgeon who adopted this plan of mine of treating tuberculous abdominal glands by opening the abdomen, removing the appendix and pouring in some boiled water.

I was led to adopt this treatment just thirty-five years ago, when a young man was sent to me at Lewisham, deeply jaundiced, with the history that he had been bleeding from the bowel for some months.

I opened over his gall-bladder and found it healthy, but as he had adenoids, and as adenoids, tonsils, and appendicitis go hand in hand, I closed the upper wound and opened over his appendix and found the big appendix that is so often found in tonsil subjects, in a condition of subacute inflammation. This was removed, and on being opened was found full of blood, a condition that is invariable with multiple tuberculous glands of the mesentery, and I found a hundred of these present in this case.

He was closed up after pouring half a pint of sterile water into his abdominal cavity. All went well except one thing, the bleeding continued from the bowels. After three months I asked my revered teacher, Scot Skirving, to give the young man a bed in Saint Vincent's and see if he could stop the hæmorrhage from the bowel. He took him in, but could not get the hæmorrhage to stop, so he returned him to me at Lewisham, and I asked Dr. Barling, who was our pathologist in those days, if he would try tuberculin on the young man. He did so; the bleeding ceased, and the patient put on weight at a great rate, and now he is a married man with a family and is a Macquarie Street specialist.

I have continued this treatment in case after case of abdominal tuberculosis due to bovine infection, and after Dr. Mary Burfitt came on as our pathologist, she kindly consented to inject the tuberculin, and under her care every case operated on has recovered and put on weight; many young men and women that I used to see in society were of great interest to me, as they were subjects of this treatment.

Even if a patient has no tuberculous glands, tuberculin proves a wonderful tonic and will make a miserable child grow fat and strong within six months; and as I do my own tuberculin injections now, I take the greatest interest in seeing some miserable weeds grow strong and fat. I do not want to put this on to Professor Welsh, but years ago I think he told me that one of the actions of tuberculin was to favourably influence the opsonic index. If he did not say it, then I say it for him now.

I have had only one fright in the course of these treatments. A young lad who had been seen by eighteen different physicians was brought to me. Pains in his abdomen, lanugo on his shoulders, long eyelashes, thin hair and a pot belly, and attacks of severe diarrhœa. He was the son of a high official, and at once I said he had tuberculous glands in his abdomen and appendicitis. I asked my teacher, Scot Skirving, to see him, and he agreed about the appendicitis, but he reserved his diagnosis about the tuberculous glands. I opened the boy, took his appendix out—full of blood, as usual—and took for an exhibit a dozen glands, leaving behind two or three thousand enlarged ones. All went well for forty-eight hours, then his temperature ran up to 105° and his pulse to 160. I saw the lad and determined to open him up. Nothing was found amiss; but I left a wick of iodoform gauze in, and next morning he had a normal temperature and pulse. What had gone wrong I do not know, but Scot Skirving suggested that the water poured into his abdominal cavity had made some reaction and the temperature and pulse were due to the absorption of something. Anyhow the young man grew up and I heard years afterwards that he was a splendid man. I could relate case after case; but these are sufficient to point out the great help tuberculin can be to the surgeon. I was discussing this with John Murphy, the great American surgeon, and he said he

believed in it, but he and others had made the mistake of using too strong a dose. The tuberculin has to be reduced by four dilutions, and then the dose is gradually, but very gradually, increased.

Dr. Wilkinson, when I first began the treatment of these cases thirty-five years ago, ridiculed it; but ten years ago, when I had gone to the Intercolonial Medical Conference to try to teach the Melbourne surgeons the folly of using a drainage tube after operating on hydatid cysts, and the still greater folly of filling them with formalin, I met Dr. Wilkinson, who had just returned from London. He came up to me and said: "I want to say that your method of treating tuberculous abdominal cases is right, and I was wrong in laughing at you."

That great gentleman of the profession, the late Sir Charles Clubbe, was convinced against his will; he sent me a test case, a girl of about thirteen; I operated, handed her on to Dr. Mary Burfitt, and we returned her fifteen pounds heavier at the end of three months.

I hope these lines may meet the eye of someone who will give this treatment a trial, and he will be delighted with it, as Dr. Mary Burfitt could tell you all about the amount of tuberculin to inject.

Yours, etc.,
W. J. STEWART MCKAY.

Lismore,
New South Wales,
May 10, 1934.

CHRONIC NEPHRITIS AND LEAD POISONING.

SIR: The attention of this Council has been drawn to a letter which appeared in the issue of your journal on the 28th ultimo, page 576, "Correspondence", under the hand of Dr. R. H. von der Borch, Chief Medical Officer of Mount Isa Mines, Limited.

The particular portion of this letter which concerns this Council is the second last paragraph, and I am instructed to advise that the information contained therein in respect to the disinfection of premises is incorrect in so far as this Council is concerned, and you are kindly requested to give publicity to same in a later issue.

Thanking you in anticipation,

Yours, etc.,
M. O'CALLAGHAN,
Shire Clerk.

Cloncurry,
Queensland,
May 14, 1934.

CONVULSIONS IN EARLY INFANCY.

SIR: After a normal pregnancy and normal labour, Mrs. F. bore a son on February 24 last. Three days later the child was reported to have had a fit. When seen by me soon after that report the child was limp, blue and unconscious. Very gradually the colour returned to normal. Examination showed no abnormality detectable in respect of the temperature, and viscera of thorax and abdomen. The left eye was closed. No sign of paresis or paralysis was present in limbs. Some curds were present in the motions, which were otherwise of normal appearance. The prepuce was long. That the child's behaviour was alarming to the mother scarcely needs mention.

The following day the baby had several more convulsions, which were preceded by screaming. This time the right eye was closed, so apparently the closing of the eye had no significance.

It was decided to try small amounts of sodium bicarbonate, sodium bromide and liquid extract of cascara sagrada thrice daily. The motions then improved and the convulsions diminished in number and severity.

The last convulsion occurred on the fifth day; and from that the child was just regaining colour when I circumcised it. During the operation the child cried lustily several times, but showed no tendency to fit. No convulsions have occurred since the operation, notwithstanding the withholding of the mixture from that time. The child also has gained weight normally. No history of fits in his progenitors could be elicited; but two paternal grand-aunts are said to have suffered from melancholia.

I would be glad of comment on the facts set forth above.

The child had no birth injury to his skull and appears to have developed the convulsions as a response of the unstable cerebro-spinal system of early infancy to the irritation arising from the long prepuce and perhaps also from temporary gastro-intestinal derangement.

Yours, etc.,
E. F. FISHER.

West Wyalong,
May 14, 1934.

NICOTIANA SUAVEOLENS.

SIR: I always enjoy reading anything that my old friend John MacPherson writes, and I want to add a note to what he says about *Nicotiana suaveolens* (issue of May 5, 1934). I can find no record, as he remarks, of the aborigines employing this plant, but colonists in the early days used the leaves as tobacco. This is borne out by Allan Cunningham's log books; but he calls the plant *Nicotiana undulata* (1817).

Then my friend John goes on to say: "Stock eat it readily and with impunity, if mixed with other herbage, but if eaten alone in considerable quantity it might prove toxic." Now the late J. H. Maiden was more emphatic on this point; for he said: "I believe it to be abundantly proved that it is, from time to time, responsible for the deaths of large numbers of sheep." Guilfoyle, years before Maiden wrote, said: "Reputed poisonous and injurious to stock." This extra information may be of some slight use to my learned friend John.

Yours, etc.,
W. J. STEWART MCKAY.

Lismore.
Undated.

Post-Graduate Work.

COURSE OF INSTRUCTION IN ANATOMY AND PHYSIOLOGY.

THE New South Wales Permanent Post-Graduate Committee, in conjunction with the New South Wales Committee of the Royal Australasian College of Surgeons, will conduct a course of instruction in anatomy and physiology for the primary fellowship examination of the Royal College of Surgeons of England, which is to be held in Melbourne on November 29, 1934. The course will be suitable also for candidates for Part I of the examination for the degree of Master of Surgery of the University of Sydney.

The date on which this course shall commence will be announced, together with a full programme, as soon as possible. For post-graduates the fee for the course will be twenty guineas.

Those who contemplate taking the course should immediately communicate with the Honorary Secretary, New South Wales Permanent Post-Graduate Committee, 225, Macquarie Street, Sydney.

Books Received.

FRACTURES, by P. B. Magnuson, M.D.; 1933. Philadelphia: J. B. Lippincott Company; Australia: Angus and Robertson. Royal 8vo., pp. 486, with 317 illustrations. Price: 37s. 6d. net.

THE 1933 YEAR BOOK OF PEDIATRICS; 1934. Chicago: The Year Book Publishers. Crown 8vo., pp. 543, with illustrations.

RECENT ADVANCES IN PSYCHIATRY, by H. Devine, M.D., B.S., F.R.C.P.; 1933. London: J. and A. Churchill; Australia: Angus and Robertson. Demy 8vo., pp. 375. Price: 19s. net.

RECENT ADVANCES IN ENDOCRINOLOGY, by A. T. Cameron, M.A., D.Sc., F.I.C., F.R.S.C.; 1933. London: J. and A. Churchill; Australia: Angus and Robertson. Demy 8vo., pp. 373, with illustrations. Price: 22s. 6d. net.

Diary for the Month.

MAY 31.—South Australian Branch, B.M.A.: Branch.
MAY 31.—New South Wales Branch, B.M.A.: Branch.
JUNE 1.—Queensland Branch, B.M.A.: Branch: Bancroft Memorial Lecture.
JUNE 5.—Tasmanian Branch, B.M.A.: Council.
JUNE 6.—Western Australian Branch, B.M.A.: Council.
JUNE 6.—Victorian Branch, B.M.A.: Branch.
JUNE 7.—South Australian Branch, B.M.A.: Council.
JUNE 8.—Queensland Branch, B.M.A.: Council.
JUNE 12.—Tasmanian Branch, B.M.A.: Branch.
JUNE 12.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
JUNE 19.—New South Wales Branch, B.M.A.: Ethics Committee.
JUNE 19.—Tasmanian Branch, B.M.A.: Council.
JUNE 20.—Western Australian Branch, B.M.A.: Branch.
JUNE 21.—New South Wales Branch, B.M.A.: Clinical Meeting.
JUNE 22.—Queensland Branch, B.M.A.: Council.
JUNE 26.—New South Wales Branch, B.M.A.: Medical Politics Committee.
JUNE 27.—Victorian Branch, B.M.A.: Council.
JUNE 28.—South Australian Branch, B.M.A.: Branch.
JUNE 28.—New South Wales Branch, B.M.A.: Branch.

Medical Appointments.

Dr. H. J. Williams (B.M.A.) and Dr. J. F. O'Keefe have been appointed Certifying Medical Practitioners at Brunswick and Moreland respectively (Victoria), pursuant to the provisions of the *Workers' Compensation Act*, 1928.

* * *

Dr. C. N. Atkins (B.M.A.) has been appointed Quarantine Officer, Hobart, Tasmania, pursuant to the provisions of the *Quarantine Act*, 1908-1924.

* * *

Dr. S. G. Nelson (B.M.A.) has been appointed Government Medical Officer at Blayney, New South Wales.

* * *

Dr. H. Whitaker has been appointed a Certifying Medical Practitioner at Ruthergien, Victoria, pursuant to the provisions of the *Workers' Compensation Act*, 1928.

* * *

Dr. C. T. B. Benson has been appointed Junior Medical Officer, Parkside Mental Hospital, South Australia.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," pages xiii, xiv, and xv.

BALMAIN AND DISTRICT HOSPITAL, SYDNEY, NEW SOUTH WALES: Resident Medical Officers, Honorary Pathologist.
CHILDREN'S HOSPITAL, CARLTON, VICTORIA: Honorary Officers.
DEPARTMENT OF DEFENCE, MELBOURNE, VICTORIA: Director-General of Medical Services.
DIRECTOR-GENERAL OF PUBLIC HEALTH, SYDNEY, NEW SOUTH WALES: Honorary Officers.
INFECTIOUS DISEASES HOSPITAL, FAIRFIELD, VICTORIA: Senior Assistant Resident Medical Officer.
ROYAL ALEXANDRA HOSPITAL FOR CHILDREN, SYDNEY, NEW SOUTH WALES: Honorary Officers.
THE BRISBANE AND SOUTH COAST HOSPITALS BOARD, QUEENSLAND: Honorary Orthopædic Surgeon.
THE BROKEN HILL AND DISTRICT HOSPITAL, BROKEN HILL, NEW SOUTH WALES: Resident Medical Officers.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associated Friendly Societies Medical Institute. Chillagoe Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their agreement to the Council before signing. Lower Burdekin District Hospital, Ayr.
SOUTH AUSTRALIAN: Secretary, 307, North Terrace, Adelaide.	Combined Friendly Societies, Clarendon and Kangarilla districts. Officer of Health, District Council of Elliston. All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington New Zealand.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor", THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £1 for Australia and £2 5s. abroad *per annum* payable in advance.